



2024

SCIENCE



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# Unit Concepts:

Concept Adaptation and Survival

Concept 2 Senses at Work

Concept 3 Light and Sight

# Unit Objectives

In this unit, we will study:

- How do living organisms adapt?
- 2 How do animals and plants use their senses to gather information?
- 3 How do living organisms communicate and transfer information?

# **Get Started** What I Already Know







## Difficulties that face living organisms to survive:

- 1 Hot or cold temperature
- 2 Availability of food, water or shelter
- Over time, living organisms adapt to survive in extreme hot conditions.

#### Camel



#### To survive in the hot and dry desert:

- ) Its body is covered with thick hairy skin.
- >> It stores fats in its hump.

#### Palm Tree



- >> It has strong roots GR To resist strong winds in the desert.
- ) Its leaves are covered with a waxy layer 🕞 To protect them from the extreme hot climate.

Bats are nocturnal animals. (They're active at night.) الخفافيش كائنات ليلية؛ أي تنشط في الليل.



Bats



Bats, like bees and butterflies, can help plants and flowers.

الخفافيش مثل النحل والفراشات تستطيع مساعدة النباتات.

# الخفافيش



Bats can fly fast like birds.

الخفافيش تستطيع الطيران بسرعة كالطيور



Bats locate their prey such as mosquitoes by a property called echolocation.

الخفافيش تُستخدم خاصية تحديد الموقع بالصدى لمعرفة مكان القريسة مثل البعوض.



# **Adaptation and Survival**

## **Concept Objectives:**

#### By the end of this concept, students will learn about:

- Types of adaptation:
  - a. Structural adaptation b. Behavioral adaptation
- Adaptation in some animals.
- Adaptation in some plants.
- Adaptation in humans:
  - a. Digestive system
- b. Respiratory system
- Humans changing the environment.

## Key Vocabulary:

- Adaptation
- Habitat
   Extinct
- Survive
   Reproduce
- Organism Camouflage
- Digestive system
- Respiratory system
- Pollution
   Ecosystem
- Predator
   Prey

# Concept 1

# **Adaptation and Survival**

	Lesson 1
Activity 1	Can you explain?
Activity 2	Penguin
Activity 3	Adaptations for survival
Q. The second	Lesson 2
Activity 4	Types of Adaptations
Activity 5	The Panther Chameleon
Activity 6	Plant Adaptations
	Lesson 3
Activity 7	Plant Scientist
Activity 8	Digestive System
Activity 9	Respiratory System
	Lesson 4
Activity 10	How Fish Breathe?
Activity 11	Humans Change the Environment
	Lesson 5
Activity 12	Record Evidence Like a Scientist: Penguin
Activity 13	Careers and Adaptation

#### Activitu

#### 1) Can You Explain?



How do living organisms protect themselves from the extreme heat of the Sun



## Starred Agama Lizard



Rodents (as jerboas) Reptiles (as snakes)



It keeps itself cool

by finding shade

during hot, sunny

days.





It stores fats in its hump to survive in the hot and dry desert.

They bury themselves in the sand or underground. They're more active at night.

#### • كيف تتكيُّف الكائنات الحية مع ظروف البيئة وتحمى نفسها من أشعة الشمس الحارة؟

- المحداء: تحافظ على يرودة جسمها عن طريق البحث عن الظل في الأيام شديدة الحرارة.
  - 2 الجمل: يخزن الدهون في سنامه ليتحمل ظروف الصحراء.
- 3 القوارض (مثل اليبوع) والزواحف (مثل الثعبان): تقوم بدفن أنقسها في الرمال أو تحت الأرض، وتكون أكثر نشاطًا خلال الليل.

#### **Reasons for Adaptation**

- If the living organism adapts, it will survive and reproduce.
- If the living organism does not adapt, it will die or go extinct.
  - إذا تكيَّف الكائن الحى، فسوف يعيش ويتكاثر.
  - إذا لم يتكيُّف الكائن الحي، فسوف يموت أو ينقرض.

# Activity 2 Penguin

>> Climate is considered one reason for adaptation.

و يُعتبر المناخ سببًا من أسباب تكيُّف الكائنات الحية.

#### **Penguins** Example:

- A penguin is a non-flying bird.
- A penguin can stand on the ice all day.

• يستطيع البطريق الوقوف على التّلج طوال اليوم،

• يُعتبر البطريق طائرًا، ولكنه لا يطير.

**Habitat:** Antarctica



 Antarctica has a polar climate that is one of the coldest places on Earth. • تتمتع قارة أنتار كتيكا بمناخ قطبي، وهو أحد أبرد الأماكن على وجه الأرض.





# Penguin's body

The penguin's body is covered with dense feathers and a thick fat layer to keep its body warm.

جسم البطريق مُغطى بريش كثيف وطبقة سميكة من الدهون حتى يشعر بالدفء.

# Penguin's feet

The penguin's feet don't have feathers or a fatty layer (blubber). لا تحتوى أرجل البطريق على ريش أو طبقة من الدهون.



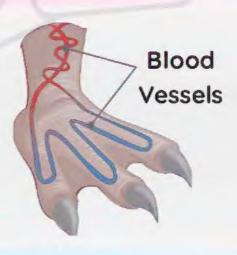
# How does a penguin keep its feet from freezing



The blood vessels that carry warm blood from the body weave around the blood vessels that carry cold blood from the feet to warm the blood vessels in the penguin's feet.



moves down from its body to its toes.



moves up from its toes to its body.

- تلتف الأوعية الدموية التي تحمل الدم الدافئ من الجسم حول الأوعية الدموية التي تحمل الدم البارد من القدمين مما يجعل الأوعية الدموية في أرجل البطريق دافئة لا تتحمد.
  - الدم الدافئ يتحرك الأسفل من جسم البطريق الأصابع قدميه.
    - الدم البارد يتحرك لأعلى من أصابح قدميه إلى جسده.



# How long could a human stand on ice in barefoot



A human would lose feeling in his/her toes after only a couple of minutes.

كم من الوقت يمكن للإنسان أن يقف على الجليد حافي القدمين؟

قد يفقد الإنسان الإحساس بأصابع قدميه بعد مرور دقيقتين فقط.



# Activity 3 Adaptations for Survival

Adaptations طرق التكيف

They are the characteristics that help living organisms survive and reproduce in the ecosystem.

هي الخصائص التي تساعد الكائنات الحية في اليقاء على قيد الحياة والتكاثر في النظام البيئي.

# Polar Bear الدب القطيم



#### Brown Bear and Black Bear الدب البني والدب الأسود





#### Habitat

Arctic Region

القطب الشمالي

Forests

الغايات

## Way of Adaptation

. It has white fur.

To blend in with the snow to sneak up on its prey.

. It has thick fur.

To keep it warm.

قراء بيضاء للتخفى بين الثلوج للانقضاض على الفريسة. فراء كثيفة للشعور بالدفء.

#### · They have dark fur.

To hide among trees during hunting.

فراء داكنة للتخفي بين الأشجار أثناء الصيد.

# Do you know?

Some animals change the color of their coat according to the seasons.

#### Arctic Fox







Camouflage التخفي It is a type of adaptation that animals use to hide from predators or sneak up on prey.

أحد أنواع التكيف الذي يساعد الحيوانات على الاختباء من الحيوانات المفترسة أو التسلل لفريستها.

## Check your understanding?



>>> Complete the following sentences from the words between brackets:

(Adaptations - Habitat - Prey - Predator)

- is the environment where living organisms live.
- 2 \_\_\_\_ is an animal that hunts (eats) another animal.
- 3 ..... is an animal that is hunted (eaten) by another animal.
- 4 are the characteristics that help living organisms survive.

# Exercises on Lesson 1

1		Choose the corr	ect answer:		
	1	Adaptation helps li	ving organisms	in all the followin	g, except
		a. survival	b. hiding	c. death	d. reproduction
	2	All of the following	must adapt to s	tay alive, except	a .
		a. tree	b. fox	c. human	d. rock
	3	ıs (are) fro	m the reasons th	nat make living o	organisms undergo
		adaptation,			
		a. Hot climate		<b>b.</b> Cold climate	
		c. Scarcity of water	er	d. All the previo	us answers
	4	Tne keeps its b	oody cool by hidi	ng in shaded are	eas during daytime.
		a. starred agama	lizard	b. Arctic fox	
		c. camel		d. polar bear	
	5	Man wears light cl	othes to adapt to		
		a. cold weather in	summer	b. hot weather i	in winter
		c. hot weather in s	ummer	d. cold weather	in winter
	6	Penguins live in An	tarctica, which is	considered a	region.
		a. desert	<b>b.</b> forest	c. tropical	<b>d.</b> polar
	7	The presence of	keeps a pe	enguin's body w	arm in cold climate.
		a. dense feathers	b. scales	c. heavy fur	d. thin fur
	8	If you stand on ice	e in your bare fe	et, you will lose	feeling in your toes
		after a few			
1		a. seconds	<b>b.</b> minutes	c. hours	d. days
	9	The body of a per	nguin is covered	with thick downy	feathers, except its
		<b>a.</b> belly	b. back	c. feet	<b>d.</b> head
	10	The bodies of all th	ne following are	covered with fur,	except
		a. fennec foxes	b. penguins	c. polar bears	d. brown bears

# Living Systems

11	All of these are a	idapted to live in	extreme cold v	weather, except .
	a. polar bears	b. penguins	c. Arctic foxes	d. fennec foxes
12	Both penguins ar	nd polar bears m	ay feed on	, va
	a. caracals	b. fennec foxes	c. agama liza	rds <b>d.</b> fish
13	A starred agama	lizard could be p	orey for	
	a. fennec foxes	b. polar bears	c. Arctic foxes	d. brown bears
14	Camouflage help	s the ani <mark>mal</mark> in a	ll the following,	except
	a. sneaking up o	n the prey	b. being easily	y seen by a predator
	c. being hard to l	be seen by a pre	dator	
	d. hiding from the	e prey		
15	All the fo owing a	nimals can blend	l in with the san	dy desert, except .
	a. camels	b. caracals	c. brown bears	d. fennec foxes
16	A rabbit could su	rvive in a polar h	abitat if it had	fur.
	a. thick	b. tan	c. white	d. a and c
17	Which of the follo	wing is an exam	ple of hiding o	camouflage?
	a. Camel's broad	feet	b. Camel's hu	mp
	c. Powerful parro	ot's wings	d. Fennec fox	's brown fur
2	Complete the fo	ollowing sente	nces from th	e words between
	the brackets:			
1	If the living organ	ism cannot adap	ot to its environ	ment, it will .
				(survive - die)
2	A camel stores	in its hump	to adapt to th	e desert environment.
				(fats - proteins)
<b>3</b>	The colorfu	help the starr	red agama liza	ird hide among rocks.
				(feathers - scales)
4	Antarctica has th	e climate	on Earth.	(coldest - hottest)
5	A can't st	and on the snow	barefoot all do	y (human – penguin)
6	The blood vessels	s in a penguin's f	eet bring b	lood up.(cold - warm)
7	Both penguins ar	nd polar bears liv	e in the	regions.
				(Arctic – polar)
8	helps a co	aracal to sneak u	p on the prey	
				anting - Camouflage)

	nas . fur to stay warm in c	told weather. (white - thick)
10 A bear	can hide among trees in fore	ests. (polar - black)
11 Both caracals	and have tan-colored	fur.
		(fennec foxes - Arctic foxes)
<b>3</b> Put (✓) or (X)	):	
1 The blood ves	sels in a penguin's feet are av	way from each other. ( )
2 The feet of the	e penguin ao not freeze beca	use they nave a layer of
fat.		( )
	unaerground in the desert in	
4 A penguin is a	i flying bird that can stand on	ice all day. ()
5 In a penguin's	feet, heat transfers from warr	m to cold blood vessels. ( )
6 All of a pengui	in's body is covered with tnick	k feathers to keep it warm,
6 - 7	4	( )
7 Camouflage h	ielps living organisms adapt t	to the climate conditions.
		( )
	considered an example of ca	
weather.	nd penguins have thick fur to	adapt to extreme cold
	live in deserts while cargonle	live in forests
	live in deserts, while caracals	
Choose from	column (A) what suits it in	both columns (B) & (C):
Column (A		Column (C)
Living organ	nism / Habitat	- It has
1 Penguin	a. Forest	a. white fur.
1	r <b>b.</b> Ocean	<b>b.</b> colorful sca es.
2 Black bear	<b>c.</b> Arctic region	
	x C. Alette region	c. dark fur.
3 Fennec for	d Antarctica	c. dark fur. d. dense feathers.
	d Antarctica	
3 Fennec for	d. Antarctica e. Desert	d. dense feathers.
3 Fennec for Polar bear	d. Antarctica e. Desert	d. dense feathers.
1 2 Write the sci	d. Antarctica e. Desert  3 entific term:	d. dense feathers. e. brown fur.
1 Polar bear  1 Write the scient The character	d. Antarctica e. Desert	d. dense feathers. e. brown fur.
1 Polar bear  1 Write the sci 1 The character reproduce.	d. Antarctica e. Desert  3 entific term:	d. dense feathers. e. brown fur.  ms to survive and



#### Living Systems

- 4 It exists under the penguin's skin to keep it warm in cold weather.
- 5 It is the place where a living organism lives.
- 6 A type of adaptation that helps the living organism to blend in with the surrounding environment.
- 7 A cat with a tan-colored fur that lives in the desert habitat.
- 8 A bear that has white, thick fur and lives in a polar region.
- 9 A fox that has brown fur and lives in the desert.

# Complete the following sentences using the words between the brackets:

(brown bear - cold - snow - trees - warm - polar bear - prey - predators)

- 1 A \_\_\_\_ has white fur that helps it blend in with the
- 2 A has dark fur to hide between the
- 3 The blood vessels in a penguin's feet bring blood up, and ....... blood down.
- 4 A \_\_\_\_\_ is the animal that is hunted by \_\_\_\_\_.

# Cross out the odd word:

- 1 Penguin Feathers Thick fur Fat layer
- 2 Polar bear Thick fur White feathers White fur
- 3 Fennec fox Caracal Arctic fox Penguin
- 4 Caracal Camel Agama lizard Polar bear

## Study the following figures, then answer the questions below:

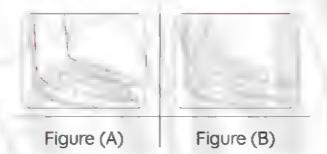


Figure (1) Figure (2) Figure (3) Figure (4) Figure (5) Figure (6)

- 1 Figures (\_\_\_\_\_) and (\_\_\_\_) live in polar regions.
- 2 Figure (\_\_\_\_) can hide among trees in the forest.
- 3 Figures (\_\_\_\_), (\_\_\_\_) and (\_\_\_\_) are desert animals.
- 4 Figure (\_\_\_\_\_) stores fats in its hump.



# Study the following two figures, then complete the sentences below:



- Figure ( ) shows the blood vessels in a penguin's feet.
- 2 If the blood vessels in a penguin's feet looked like those in figure ( \_\_\_\_), they would freeze.

# Give reasons for:

- 1 Adaptation is necessary for all living organisms.
- 2 The starred agama lizard always searches for shaded areas in the daytime.
- 3 A penguin can stand on the ice all day.
- 4 A penguin has a thick fat layer and dense feathers on its body.
- 5 The polar bear has thick and white fur.
- 6 Some animals undergo camouflage.

# What happens if:

- 1 The blood vessels in the human's feet were like those in the penguin's feet?
- 2 The brown bear has the same color as the polar bear's fur?
- 3 The blood vessels in the penguin's feet weren't weaved around each other?
- 4 The starred agama lizard body wasn't covered in colorful scales?





# 4

#### **Types of Adaptations**

>>> An adaptation can be structural or behavioral.

## THE COLOR OF COMMENT ASSESSMENT

 It's a change that happens in the structure of the organism's body.

• هو التغير الذي يحدث في جسم الكائن الحي.



## (Detailered adaptedor)

 It's a change that happens in the behaviors (acts) of an organism.

• التغير الذي يطرأ على سلوك الكائن الحي.



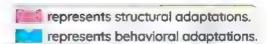
Bird migration

## Check your understanding?



- Classify the following sentences by putting the letter (S) for structural adaptations and the letter (B) for behavioral adaptations:
  - 1 A camel stores fats in its hump to adapt to the desert habitat. (S)
  - 2 The agama lizard searches for shade to stay cool. ( )
  - 3 The blood vessels in a penguin's feet weave around each other. ( )
  - 4 Rodents bury themselves underground in the sand during the day. ( )
  - 5 The fennec fox stays in the burrows on sunny days. ( )

#### Adaptation and Survival



## Fennec Fox

Habitat: Desert



#### Extra large ears

To lose heat and cool its body.

له آذان طويلة ليفقد الحرارة ويبرد جسمه.



## To hide and blend in with the desert landscapes.

- To protect it from the hot Sun.
  - له غراء بنية داكنة للتخفى في البيئة الصحراوية ولحمايته من أشعة الشمس.

#### t ponti iki dogu

To cool its body

(by taking up to 700 breaths per minute).

• يلهث مثل الكلب لتبريد جسمه. (يستطيع اللهث ٧٠٠ مرة في الدقيقة).



## **Arctic Fox**

Habitat: Tundra



- · To stay warm.
- له أذنان وأرجل قصيرة ليبقى جسمه دافئًا.
- Thick fur coat
- To stay warm.
- له فراء كثيفة ليبقى جسمه دافئًا.
- It has a white coat during winter, but it turns brown in summer.
- To sneak up on the prey in any season.
  - له لون فراء أبيض في الشتاء ويتحول للبني وقت الصيف للتسلل على الفرائس في أي فصل من فصول السنة.

## Both foxes have some similar adaptations





 To strengthen their hearing sense to help them hunt.

• يساعد شكل الآذان لهما على تقوية حاسة السمع مما يساعدهما على الصيد.



#### i North feanail Iva in fearesi

- The fennec fox stays in burrows during the day to stay cool.
  - يبقى في الجمور أثناء الصباح ليبقى جسمه باردًا.



- The Arctic fox stays in burrows during the night to stay warm.
  - ببقى في الجمور أثناء الليل ليبقى جسمه دافئًا.



# Book frace in the installation and formula to jest all limit of findings, belowing fraces, that plant many, the property of th

- Because it is hard to find food in a hot, dry desert or a cold tundra.
  - كلاهما يأكل أنواعًا مختلفة من الطعام مثل: الحشرات والفواكه وجذور النباتات ويقايا الفرائس
     لندرة الغذاء في الصحراء الجافة الحارة أو صحراء التندرا شديدة البرودة.



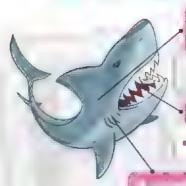
- In a tundra, the temperature may reach -50°C in the winter months.
- Animals that have a varied diet are flexible about what they eat and where they hunt, so they are well-adapted for survival.
  - في التندرا، قد تصل درجة الحرارة إلى ٥٠٠ درجة مئوية في أشهر الشتاء.
  - الحيوانات التي تتسم بالمرونة فيما يتعلق بما تأكله وأين تصطاد تتكيَّف جيدًا للبقاء على فيد الحياة.

#### Adaptation and Survival

represents structural adaptations. represents behavioral adaptations.



Habitat: Salt water - Fresh water



Its body is adapted to survive in

· يتكيُّف جسم قرش الثور للبقاء على قيد الحياة في كل من المياه المالحة والمياه العذبة.

#### Sharp teeth

• To cut the prey's flesh. ميناك أسنانًا حادة لتمزيق لحم الفريسة.

To sneak up on the prey.

و يستخدم إستراتيجية للتخفى تُسمى التباين اللونى للانقضاض على الفرائس.

If a fish swims underneath it and looks up, the bull shark may blend in with the bright light of the Sun due to its white belly.



If a fish swims above it and looks down, it may not see the bull shark in the shadow due to its dark back.

It can hunt in salt water and fresh water.

It eats different kinds of food (varied diet



## Give a reason for...



- Bull sharks have less competition for finding food in fresh water. Because most sharks can only live in salt water and there are no other sharks in fresh water.

• تتمتع أسماك قرش الثور بمنافسة أقل للعثور على الطعام في المياه العذبة.

لأن معظم أسماك القرش تعيش فقط في المياه المالحة، ولا توجد أسماك قرش أُخرى في المياه العذبة.





#### 5 The Panther Chameleon

- >> The starred agama is a lizard that lives in hot and dry deserts.
- >> The panther chameleon is a lizard that lives in tropical rainforests.
- >> Both of them are reptiles and are covered with scales.

#### Panther Chameleon Habitat: Tropical rainforest

#### It has bright-colored scales

 To hide among green leaves and colorful flowers. أجسامها مغطاة بحراشيف ملونة للتخفى بالأوراق الخضراء والزهور الملونة.



#### Each eye moves independently in a different direction.

- One eye searches for food.
- The other eye is to avoid danger.
  - عيون الحرباء تتحرك بشكل منفصل في اتجاهات مختلفة.
    - عين تبحث عن الفريسة والعين الأخرى لتجنب الخطر.

#### Its tail looks like a hand. V-shaped feet

 To hold tightly on the branches of trees. لها أقدام تشبه حرف (v) وذيل يشبه اليد للتمسك بقوة بأفرع الأشجار.

#### In danger, it scares its attacker by:

- Puffing its body with air.
- 2 Opening its mouth wide.
- 3 Changing the color of its scales.

عندما تشعر بالخطورة فإنها تخيف أعداءها؛ حيث تقوم بــــ

- تفخ جسمها بالهواء. - فتح فمها باتساع. - تغيير لون الحراشيف.





The panther chameleon doesn't have teeth or claws for defense.

• لا تمثلك حرياء النمر أسنانًا أو مخالب للدفاع عن نفسها.

#### 6 Plant Adaptations

- >>> Plants can grow everywhere that sunlight shines.
- >>> Plants have structural and behavioral adaptations, like animals, that help them survive in different environments.
  - و تستطيع النباتات العيش في أي مكان تصله الشمس.
  - للنباتات تكيف تركيبي وسلوكي مثل الحيوانات؛ لتستطيع البقاء في البيئات المختلفة.



## We will study two terrific trees, which are:



أشجار السنط

Live in

#### savannah

#### in Southern Africa

- Grassland habitats
- >> Its temperature is mild.
- >> There is an extreme lack of water and drought conditions.
  - ه سهول عشيبة.
  - درجة حرارتها معتدلة.
  - هذاك نقص شديد في المياه وموجات من الجفاف.



أشجار الكابوك

Live in

#### **Amazon** rainforests

- >> It has soggy soil.
- >> It is characterized by strong winds.
- >> It is easy to find water where it is rainy most of the year.
  - لها تربة طبنية.
  - تتميز برياحها القوية.
  - الماء متوفر بكثرة حيث يتساقط المطر معظم السنة.

# **Acacia Tree** (Umbrella-shaped tree)

Habitat: Savannah



It has taproot roots.

(A very long root that grows directly downward) (It may reach 35 meters below the soil) To search for water in deep soil.



• لديها الجذر الوتدي (جذور طويلة تنمو لأسفل) (يمكن أن يصل طول الجذور لـ ٣٥ مترًا تحت سطح الأرص). للبحث عن المياه في أعماق التربة.

## 2 Trunk



 It has a very long trunk that only a giraffe can reach its leaves.

- لديها جذع طويل حيث لا يصل لأوراقها إلا الزرافة.

 It stores water in its trunk as a camel stores fats in its hump.

• تخزن الماء في جذعها، كما يخزن الجمل اللاء في سنامه.





• It has tiny leaves on its top GR

To hold water and soak up sunlight to make food. لها أوراق صغيرة جدًّا لساعدتها على

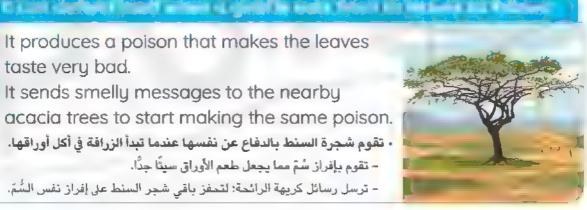
الاحتفاظ بالمياه وامتصاص ضوء لصنع الغذاء

• It has sharp spines around the leaves.



• تمثلك أشواكًا حادة حول الأوراق لمنع الحيوانات من أكل أوراقها.

- 1 It produces a poison that makes the leaves taste very bad.
- 2 It sends smelly messages to the nearby acacia trees to start making the same poison. • تقوم شجرة السنط بالدفاع عن نفسها عندما تبدأ الزرافة في أكل أوراقها.
  - تقوم بإفراز شم مما يجعل طعم الأوراق سيئًا جدًا.
  - ترسل رسائل كريهة الرائحة: لتحفز باقى شجر السنط على إفراز نفس السُّمّ.





#### Habitat: Amazon rainforest



 It has buttress roots (large wide roots) that grow up around the trunk.

To hold the tree firmly in the soggy soil.

- They start up to 5 meters above the soil.
  - لديها جذور عريضة وكبيرة تُسمى الجذور الداعمة، وتنمو لأعلى حول الجذوع؛ لتثبيت الشجرة بقوة في التربة الطبنية.
    - بيداً طول الحذور من ٥ أمتار فوق التربة.





• It has hand-shaped leaves with narrow parts. To a low the wind to move gently through the leaves without tearing (cutting) them.





#### It sends different messages through the wind.

- It sends its delicious-smelling flowers by wind.
- The wind carries its fluffy yellow seeds across the forest.
  - وتستخدم الرياح لإرسال رسائل:
  - تنشر شجرة الكابوك عبير أزهارها.
  - تحمل الرياح بذور الشجرة الصفراء الرقيقة عبر الغابة.



## Give a reason for...



- In Amazon rainforests, it is hard for plants to reach sunlight.

Because most trees in Amazon rainforests exceed 70 meters tall.

• من الصعب على النباتات الوصول لضوء الشمس في غابات الأمازون المطيرة.

حيث يتخطى طول معظم الأشجار ٧٠ متراً.



# Exercises on Lesson 2

1		Choose the cor	rect answer:		
	1	A type of adapta is	tion that helps the	e animal protec	t itself from enemies
		a. camouflage	b. extinction	c. migration	d. reproduction
	2	Which of the follo	wing is an examp	ole for physical o	adaptation?
		a. Migration of b	irds	<b>b.</b> Hunting at r	night
		c. Fur color		d. Panting	
	3	Animals that live	in a hot environn	nent have	ears to help them
		stay cool.			
		a. small	b. short	c. long	d. sharp
	4	pant to la	wer their body te	mperature.	
		a. Whales	b. Penguins	c. Foxes	d. Bats
	5	is (are) co	overing the body	of the Arctic fox	
		a. Heavy hair	<b>b</b> . Heavy skin	c. Thick fur	d. Many feathers
	6	The fennec fox he	as tan-colored fu	rto .	
		a. reflect the sun	light	b. blend in with	n the sand
		c. stay warm		d. a and b	
	7	In January, the c			
		3 3		c. white	
	8	Fennec foxes and	d Arctic foxes are	common in all	the following, except
		er erer Norr- d B			
		a. iving in extren			same fur color
		c. eating differen			ong hear ng sense
	9		oolar bear's fur he		
		a. rocks	b. snow	c. trees	d. sand
	10	Both agama lizar	ras and panther c		
		a. having scales	and the selection of	b. being reptile	es
		c. living in the sa	me nabitat	d. a and b	



# Complete the following sentences from the words between the brackets:

1	The African elephant lives in a warm-climate region, so it has extra
	ears, (large - small)
2	A polar bear has ears than that of a caracal. (longer - shorter)
3	A/An fox changes the color of its fur every six months.
	(fennec – Arctic)
4	Animals that live in extreme cold weather habitat have ears.
	(short - long)
5	The fox stays in burrows at night. (fennec - Arctic)
6	Arctic foxes and fennec foxes feed on different types of food due to the
	of food. (plenty – lack)
7	The Arctic fox's fur color turns into when the snow melts.
	(white - brown)
8	The ability of the bull shark to hunt at any time is a adaptation.
	(structural – behavioral)
9	A bull shark finds more competition for finding food in water.
	(salt - fresh)
10	The eyes of the panther chameleon can move
	(separately – together)
11	A panther chameleon holds on trees' branches by its hana-like
	(feet - tail)
12	The desert lizard has colorful scales to blend in with the colorful
	(flowers - rocks)
13	A kapok tree has fluffy seeds. (white - yellow)
14	Acacia trees and have an umbrella shape. (pine trees - kapok trees)
15	An acacia tree stores water in its (roots - trunk)
16	An acacia tree grows in . (Amazon forests – savannah)
17	Sending a message by an acacia tree is a adaptation.
	(structural - behavioral)
18	is from the difficulties facing kapok trees.
	(Finding water - Catching sunlight)

	19	Both acacia trees and kapok trees send messages through  (water - v		d)
	20 21	Rainforests are characterized by the soil, (soggy - are characterized by the dry conditions.  (Amazon rainforests - Savannah grasslo	dr	y)
4		Put (✓) or (X):		
	1	Adaptation is necessary for the survival of all living organisms.		)
	2	The migration of birds to search for food is considered a form of		
		benavioral adaptation.	(	)
	3	Animals digging trenches is a form of structural adaptation.	(	)
	4	Foxes have a strong sense of hearing.		)
	5	Some animals that live in cold habitats have long ears to help the	m	
		keep their body temperature warm.		)
	6	The fur that some animals possess to protect them from the cola	İŞ	
		a behavioral adaptation.		)
	7	The fennec fox has tan fur to h'de in the tundra desert.	(	)
	8	The fennec fox pants like dogs to stay warm at night.	(	)
	9	Countershading strategy in bull snarks is a structural adaptation.	(	)
	10	All kinds of sharks live in salty water only.	(	)
	11	A panther chameleon puffs up its body to face any danger.		)
	12	A caracal's body is coated with tan-colored feathers.	(	)
	13	Plants don't need to adapt like animals to survive in their habitats.	(	)
	14	Production of poison in acacia trees is a benavioral adaptation.	(	)
	15	Plants have two types of adaptation (structural and pehavioral).	(	)
	16	Acacia trees grow in the Amazon forest.	(	)
	17	Plants need long roots that extend deep into the soil to survive in	the	>
		water scarcity.	(	)
	18	The kapok tree roots grow deeper than the acacia tree roots.	(	)
	19	Buttress roots grow directly downward to search for water aeeply.	(	)
	20	Taproot roots hold the kapok tree firmly in the soggy soil.	(	)
	21	In dry environment, plants are adapted to store water for a long t	ime	€.
			(	)



# 4

#### Write the scientific term:

- 1 It's a change in the behavior or act of a living organism to adapt to its environment.
  - 2 It's a type of adaptation that includes changing some parts of the animal's body structure.
    - 3 An aquatic animal that can hide from its enemies through countershading.
    - 4 A desert animal that pants like a dog and has large ears to hear its prey.
    - 5 An animal whose fur color changes as the seasons change.
    - 6 It's a strategy of camouflage in which the animal's color is darker on top, and lighter on its belly.
    - 7 A technique that helps dogs and fennec foxes to cool their bodies.
    - 8 A place where both Arctic foxes and fennec foxes hide to overcome extreme climate.
    - 9 It is a rainforest and it's characterized by its strong wind and soggy soil.
    - 10 It is a grassland habitat that has drought conditions.
    - 11 It's a very long root that grows directly downward in acacia trees.
    - 12 They're wide and large roots that fix kapok trees firmly to the soggy soil.
    - 13 It is a terrific tree that grows in the Amazon rainforests in Braz'l.
    - 14 It is a terrific tree that adapted to survive in savannah grasslands.
    - 15 The type of adaptation when a kapok tree sends smelly messages by wind.
    - 16 A part of the kapok tree that is supported by buttress roots.
    - 17 A substance that is produced by an acacia tree to prevent animals from eating its leaves.

- 6 Cross out the odd word:
  - 1 Taproot roots Long trunk Wide leaves Produce poison
  - 2 Kapok tree Brown bear Panther chameleon Acacia tree
- Compare between the following:

P. O. C.	Savannah	Amazon Rainforests
Trees	#FESSMANDS-trainment-floring-renorminal SESSESS Imp. Per Ext. Supervisors - quiding-sur-field distributions in	annight proposer mag.
Characteristics	<ul><li>a habitat</li><li>b conditions</li><li>c. The temperature is</li></ul>	d. soil e. to find water f. winds

P. O. C.	Acacia Tree	Kapok Tree
Habitat	*** And the second group representation as building the second assessment as a second as a being so to select any profit from	variapmormapmeadenséries corono
Shape		
Roots Name		
Leaves		المستنونين

Complete the following sentences using the words between the brackets:

(Arctic fox - salt water - air - structural - behavioral - independently - bull shark - fennec fox)

1 The ability of the panther chameleon to change its scales' color is

- a \_\_\_\_\_ adaptation.2 The panther chameleon puffing up its body with is considered a \_\_\_\_\_ adaptation.
- 3 A/An has a countershading property to sneak up on its prey in water.
- 4 A/An ...... has longer ears than that of the ...

P. O. C.	Fennec Fox	Arctic Fox
Habitat	"April 1	
Fur Color	***************************************	_
Shape of Ears	S	
Choose from	column (A) what suits it in	both columns (B) &
~ Column (A)	- Column (B) —	Column (C)
1 Fennec fox	a. has a hump	a. to hold on
2 Arctic fox	<b>b.</b> has sharp teeth	branches.
3 Panther	c. pants like dogs	<b>b.</b> to store fats.
chameleon	d. V-shaped feet	c. to warm its body
4 Bull shark	e. has short ears	d. to tear the prey.
5 Camel		e. to cool its body.
1 2	3 4	5
01	following sentences by pu	utting the letter (S) fo
)) Glassity the t		
	ptations and the letter (B) fo	
structural ada	ptations and the letter (B) for at night in complete darknes	r behavioral adaptation
structural ada 1 Bats can hunt		or behavioral adaptations.
structural ada 1 Bats can hunt	at night in complete darknes	or behavioral adaptations.
structural ada  1 Bats can hunt  2 The panther cl	at night in complete darknes	or behavioral adaptations.
structural ada 1 Bats can hunt 2 The panther cl 3 The migration	at night in complete darknes hameleon changes its scales'	or behavioral adaptations.
structural ada 1 Bats can hunt 2 The panther cl 3 The migration 4 The Arctic fox	at night in complete darknes hameleon changes its scales' of birds to warmer places.	or behavioral adaptations.
structural ada 1 Bats can hunt 2 The panther cl 3 The migration 4 The Arctic fox 5 Humans wear	at night in complete darknes hameleon changes its scales' of birds to warmer places. stays in burrows at night.	or behavioral adaptations.
structural ada 1 Bats can hunt 2 The panther cl 3 The migration 4 The Arctic fox 5 Humans wear 6 Foxes have a s	at night in complete darknes hameleon changes its scales' of birds to warmer places. stays in burrows at night. heavy jackets in winter.	color on seeing an ene
structural ada 1 Bats can hunt 2 The panther cl 3 The migration 4 The Arctic fox 5 Humans wear 6 Foxes have a s 7 The panther cl	at night in complete darknes hameleon changes its scales' of birds to warmer places. stays in burrows at night. heavy jackets in winter. sharp hearing sense.	care predators.
structural ada 1 Bats can hunt 2 The panther cl 3 The migration 4 The Arctic fox 5 Humans wear 6 Foxes have a s 7 The panther cl 8 The eagle has	at night in complete darknes hameleon changes its scales' of birds to warmer places. stays in burrows at night. heavy jackets in winter. sharp hearing sense. hameleon puffs its body to so	care predators. helps it in ripping meat.

# Give reasons for:

- 1 The fennec fox has extra-large ears, while the Arctic fox has small ears.
- 2 The fennec fox and the Arctic fox adapted to eat different kinds of food.
- 3 The bull shark has sharp teeth.
- 4 The bull shark has a dark back and a white belly.
- 5 In fresh water, a bull shark finds less competition in finding food.
- 6 Each eye of the panther chameleon works independently.
- 7 The pantner chameleon has V-shaped feet and a hand-like tail.
- 8 The pantner chameleon puffs its body and opens its mouth widely.
- 9 Plants can grow everywhere.
- 10 The acac'a tree has taproots, while the kapok tree has buttress roots.
- 11 The acacia tree has tiny leaves and sharp spines.
- 12 The kapok tree has hand-shaped leaves.

# What happens if:

- 1 A desert lizard stands on a yellow rock?
- 2 There's less food in the sea for a bull shark?
- 3 The bull shark had dark pelly and white back?
- 4 The bull shark hunts during day and at night?
- 5 The chameleon's eyes were like the human's eyes?
- 6 The chameleon couldn't change its scales' colors?
- 7 Acacia trees have short roots?
- 8 A giraffe starts to eat from acacia leaves?
  - 9 A kapok tree has wide leaves?

# Lesson 3



# 7 Plant Scientist

- Botanists are the scientists who study plants and how they adapt.
- >>> Roots, leaves, and stems are common parts of a plant.
- >>> Plants have different-shaped leaves and various root systems to help them survive.
  - و علماء النبات هم العلماء الذين يدرسون النباتات وكيفية تكيُّفها.
    - \_ الجذور والأوراق والسيقان أجزاء موجودة في كل النباتات.
  - ، للنباتات أشكال محتلفة من الأوراق وأنظمة حذور محتلفة؛ لساعدتها في البقاء على قيد الحياة.

# Examples of plants structural adaptations in dry environments:



. It has thick roots and narrow leaves.

To prevent the tree from being damaged in a windstorm.

> لها جدور سميكة وأوراق صغيرة لتساعد الشجرة على الصمود أمام الرياح العاصفة.





 It has sharp spines and a tough outer cover.

To prevent animals from eating its leaves and fruits.

> لها أشواك حادة وغطاء خارجي خشن لنع الحيوانات من أكل أوراقها أو ثمارها.





· Its hour lives are bunched at the top of the tree

To prevent animals from reaching them

. الأغصان متفرعة ومتشعبة في الجزء العلوي من الشجرة لتم الحيواتات من الوصول إليها،



# Examples of plants structural adaptations in humid environments:



 It has wide leaves floating on the water.

To absorb a lot of sunlight.

لها أوراق عريضة تطفو عنى سطح الماء
 لامتصاص أكبر كبية من ضوء الشمس.





Mangrove tree
Salt water

It has long and strong roots.
 To resist the water waves.
 الها جذور طويلة وقوية القارمة الأمواج.



Snow

It has needles instead of leaves.
 To prevent water loss.

 It has a triangular shape, and short branches.

So that the snow can slide easily on them without breaking the branches.

- تحتري على إبر بدلًا من الأوراق لمنع فقدان الماء.
  - لها شكل مثلث وفروع قصيرة

للسماح للثلج بالانزلاق بسهولة دون كسر الفروع.



# What happens if...



- A plant was placed in a different environment?

The plant would struggle to meet its needs and may not survive.

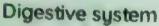
ماذا سيحدث لو: تم وضع النبات في بينة مختلفة؟

سيكافح النبات بقوة لتلبية احتياجاته، وقد لا بعيش.

# -11 mul 8

## **Digestive System**

The body of humans or animals is made up of systems, such as:





Respiratory system



Nervous system



It is a group of organs that work together to perform a job (function الجهار: هو مجموعة من الأعضاء التي تعمل معًا لأداء وظيفة.

The digestive system and respiratory system work together to get energy from food and breathing.

بيل الجهاز الهضمي والجهاز التنفسي معًا للحصول على الطاقة من الطعام والتنفس.

# Our bodies need energy to:

# Do different activities.

 To move, run, walk, talk, ... etc.



- The heart needs energy to beat.
- The lungs need energy to breathe
- The brain needs energy to think.



Our heart beats = 100,000 beats/day We breathe = 20,000 breaths/day



# How do our bodies get energy from food



- 1 The digestive system helps our body get nutrients from food.
- Nutrients provide our body with energy.

## يِّفُ تحصل أجسامنا على الطاقة من الغذاء؟

إساعه الجهاز الهضمي أجسامنا على الحصول على العناصر الغذائية من الطعام،

الروُد العناصر الغذائية الجسم بالطاقة.

# **Human Digestive System**

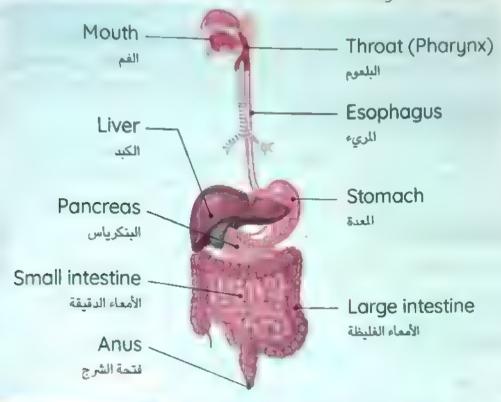
It is the process of breaking down food into the simplest Digestion form to provide the body with nutrients.

الهصم مو عملية تكسير الطعام إلى أنسط صورة لترويد الحسم بالعثاصر الغذائية



# Function of the digestive system:

The digestive system breaks down the food, so the body can use it for energy.





#### important Note:

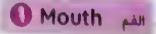
The digestive system starts with the mouth and ends with the anus.

## **Digestion Process Pathway**

Small Large Mouth Throat Esophagus Stomach Anus



# How does the digestive system work?



The digestion of food starts in the mouth.

Teeth

They crush (break) the food during chewing.

Saliva

A liquid substance that moistens the food.

It breaks down the food chemically.

Tongue • It mixes the crushed food with saliva.

. بيدأ مضم الطعام عن طريق القم.

. تقوم الأسنان بسحق الطعام أثناء المضغ.

، يقوم اللعاب بترطيب الطعام و تكسيره كيميائبًا.

ويقوم اللسان بخلط الطعام مع اللعاب.

# Pharynx (Throat) البلعوم

When you swallow, your throat pushes the food into the esophagus.

، عند البلغ، بدفع حلقك الطعام إلى المريء،



 It is a long muscular tube that moves the food down into the stomach. - إنه أنبوب عضل طويل ينقل الطعام إلى أسفل المحدة.



- It is a muscular organ.
- Function of the stomach;

The stomach mixes the food with the acidic and digestive juices (enzymes) until it becomes a soupy liquid.

- The food stays in the stomach for a few hours.
- Then, the muscles of the stomach move the food into the small intestine.
  - ، مي عضو عضلي،
  - وظيفة المدة:

تقوم المعدة بمزج الطعام مع العصارات الحمضية والعصارة المعدية (الإبريمات) حتى يتحول إلى سائل

يبقى الطعام في المعدة لبضع ساعات.

ثم تقوم عضلات المعدة بنقل الطعام إلى الأمعاء الدقيقة.







#### **6** Small Intestine الأمعاء الدقيقة

. It's a long, winding tube (More than six meters long)

## Function of the liver and pancieus

. They pour Juices into the small intestine that help break down food into nutrients.

### Function of the small intestine:

• The nutrients are absorbed through the walls of the small intestine to enter into the tiny blood vessels.

#### Then:

- The blood carries nutrients to all body parts.
- Undigested food flow into the large intestine.

- هي أنبوب طويل ملتف. (يزيد طوله عن ستة أمتار).

وطيقة الكند والبنكرياس؛ تنتج العصائر في الأمعاء الدقيقة التي تساعد في تكسير الطعام إلى عناصر غدائية وظيفة الأمعاء الدقيقة: يثم امتصاص العناصر الغذائية من خلال حدران الأمعاء الدقيقة لتدخل في الأوعية الدموية الدقيقة

- · يقوم الدم بحمل العناصر الغذائية إلى جميع أجزاء الجسم.
  - ثم تصل المواد غير المضومة إلى الأمعاء الغليظة.

## الأمعاء الغليظة Large Intestine

· It's a tube that starts at the end of the small intestine and ends at the anus.

#### Function of the large intestine:

- It absorbs water from the undigested food, so that they become solid waste.
- Solid waste leaves the body through the anus
  - هي أنبوب يبدأ من نهاية الأمعاء الدقيقة وينتهي مع فتحة الشرج.

#### وظيفة الأمعاء الغليظة:

- تمتص الماء من الطعام غير المضوم فيتحول لفضلات صلية.
  - و تخرج الفضلات الصلبة من الجسم عبر فتحة الشرج.





Compare the digestion that takes place in the stomach, small intestine, and large intestine.

#### Stomach

• The stomach mixes the food with the acidic and digestive juices (enzymes) to change it into a soupy liquid.

تقوم المعدة بمزج الطعام مع
 العصارات الحمضية والعصارة المعنية
 (الإنزيمات) لتحويله إلى سائل.

#### **Small Intestine**

 The food is also broken down, but unlike the stomach, the small intestine absorbs nutrients.

يتفكك الطعام أيضًا ولكن على عكس
 المعدة، ثمتص الأمعاء الدقيقة العناصر
 الغذائية.

#### Large Intestine

• The large intestine absorbs the water from the undigested food, so no digestion takes place in it.

تمتص الأمعاء الغليظة الماء من الطعام
 غير المهضوم؛ لذلك لا يحدث هضم في
 الأمعاء الغليظة



- · Chewing food breaks it up mechanically.
- · Saliva breaks down the food chemically.

# To keep your digestive system healthy:



Chew the food well.



Do not eat



Drink a large amount of water.



# Respiratory System

The human body monds an interference of

carbon dioxide

hydrogen

>> Your breath quickens during

to require here in man

thinking

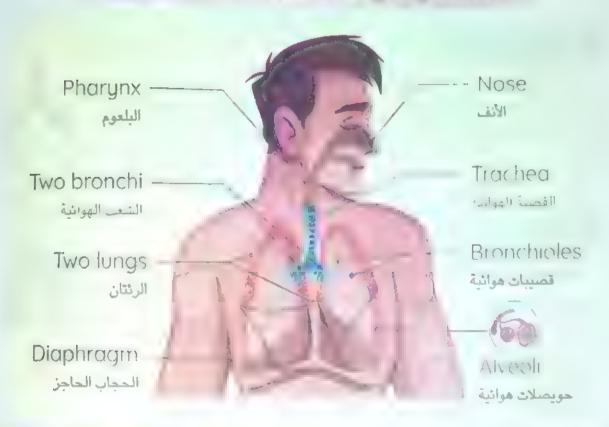
conning -

sleeping

#### Respiratory system

It is the sustem that is responsible for the attrique point of الجهاز التنفسي: هو المهاز السئول عن عملية التنفس،

# Human Respiratory System



## Respirantly Process Fathwall

Nose

Pharynx Trachea

Two Bronchi

Bronchioles

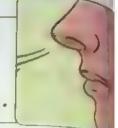
Alveoli

# How does the respiratory system work?

## Nose:

- · It is the first organ of the respiratory system
- · Air enters the body through the nose and mouth.

• هو أول عصو في الحهار التنفسي. • بدحل الهواء الحسم عن طريق الأنف والفم



# Throat (Pharynx):

• It allows all to pass to the trachea • يسمح للهواء بالرور إلى القصية الهوائية



## () Trachea:

- A tube that allows air to pass to the two lungs.
- Inside the lung, it is divided into two bronchi at its end.

· أنبوب يسمح للهواء بالمرور إلى الرئتين. · • داخل الرئة ينقسم إلى قصيتين في بهايته.

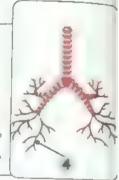


## Two Bronchi:

- They allow air to enter the two lungs.
- They are divided into smaller tubes that look like tree's branches called bronchioles.

يسمح للهواء بالدخول إلى الرئتين.

وهي مقسمة إلى أبابيب أصغر تشبه فروع الشجرة تُسمى القصيبات الهوائية.



# Two Lungs:

They fill up with air like two balloons.

## Inside the two lungs:

- · Bronchioles end with tiny air sacs surrounded by blood vessels called alveoli.
- Alveoli are responsible for gas exchange
- Oxygen transfers within them to the blood stream then the blood carries it to all body parts.
  - عندما ينتقل الهواء إلى الرئتين، فإنهما تنتفخان مثل البالون.
  - تنتهي الشعبيات الهوائية بأكياس صغيرة محاطة بالأوعية الدموية تُسمى الحويصلات الهوائية.
    - الحويصلات الهوائية مسئولة عن عملية تبادل الغازات.
  - ينتقل الأكسجين من خلال الحويصلات الهوائية لمحرى الدم الذي ينقل عار الأكسحير إلى حميع أحراء الحسم





# Concept 1

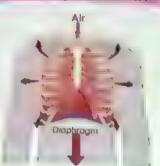
# Respiration (breathing)

It's the process of inhalation "pulling the air In" and exhalation "pushing the air out". من عملية الشهيق (سحب الهواء للداخل) والزمير (دلع الهواء للخارج).

# Respiration includes

# inhalation Process

"Pulling the air in"



## Exhibition Process

"Pushing the air out"



## Diaphragm

Moves downward (Shrinks or contracts)

Moves up (Relaxes or expands)

#### **Chest Size**

Increases (Enlarges)

Decreases
(Become narrower)

### Type of Air

Air rich in oxygen gas enters the lungs

#### في عملية الشهيق:

- ه يتحرك الحجاب الحاجز لأسفل (يتقلص ينكمش).
  - ويتسع القفص الصدري
  - لإدخال الهواء الغنى بالأكسجين إلى الرئتين.

Air rich in carbon dioxide gas is expelled out the lungs.

#### ق عملية الزفع:

- يتحرك الحجاب الحاجز لأعلى (يسترخي يتمدد).
  - ويضيق القفص الصدري.
  - لإخراج ثاني أكسيد الكربون من الرئتين.

## Diaphragm:

 It's a large muscle at the base of your ribs that has an important role during inhalation and exhalation.

• عصلة كديرة في أسعل (قاعدة) الصلوع، لها دور مهم أثناء عمليني السهيق والزهير،





- The properties of all organs in the digestive system or respiratory system are considered structural adaptations.
- The pharunx exists in both the digestive and respiratory systems.

جميع الخصائص (الوظائف) داحل الجهاز الهضمي أو الجهاز التنفسي تعتبر تكيفات تركيبية.

بوجد البلعوم في كلا الجهازين الهضمي والتنفسي،

## Functions of the respiratory system:

- It supplies the body with oxygen gas through inhalation.
- It gets rid of carbon dioxide gas through exhalation.

#### أهمية الجهاز التنفسي:

- يعمل على إمداد الجسم بغاز الأكسجين خلال عملية الشهيق.
- بعمل على التخلص من غاز ثاني أكسيد الكربون أثناء عملية الزفير.

# Give a reason for.



- Carbon dioxide gas is considered a waste material for our bodies. Because it is a harmful gas, so our bodies expel it during exhalation.

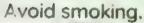


How does the respiratory system get oxygen to the body cells



- The lungs absorb oxygen from the air that we breathe in.
- 2. The blood stream carries oxygen gas to all body cells.

# To keep your respiratory system healthy:





تجنب التدخين.

Eat fruits rich in vitamin C.



تناول فواكه تحتوى على فيتامين C.

Breathe in clean air.



تنفس هواء بقيًّا.



# Exercises on Lesson 3

a. cells

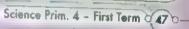
1	Choose the correct answer:	
	have sharp spines to keep	the animals areas
	a. Barbary figs b. Acacia trees	s Kapak trass at a and h
ונו	2 The roots of palm trees help them	to
	a. stand strong against the wind	h reach the underground water
	c. fix the plant in the soil	d. all the previous answers
i i	Both bull sharks and can si	If vive in salt water
	a. water lilies	b. mangrove trees
	c. barbary figs	d. acacia trees
12	The may feed on the roots	of barbaru fias
	a. panther chameleon	b. Arctic fox
	c. fennec fox	d. polar bear
5	Desert plants are characterized by	
	a. storing water	b, their tiny leaves
	c. their sharp spines	d. all the previous answers
6	A pine tree has needles instead of	
	a. prevent animals from eating it	
	c. resist strong winds	d. absorb sunlight
7	At of these are from the character	_
	a, that they have needles instead of	of leaves
	b. their short branches	
	c. their triangular shape	d. their wide leaves
8	Paim trees have to resist st	rong winds.
	a, thin roots and small leaves	b. thick roots and small leaves
	c. thick roots and large leaves	d, thin roots and large leaves
9	The roots of extend deeply	to search for water.
	a. mangrove trees b. kapok trees	c. water Lies d. acadia trees
10	Any system inside the body consist	ts of a group or

b. tissues

c. organs d roots

11	is (are) re	esponsible for gett	ing the energy fro	om food.
	a. Digestive syst		b. Respiratory sy	ystem
	c. Nervous syste	em	d. a and b	
12	The food must b	e digested to		
	a. get the nutrie	nts from it	b. get the neede	
	<b>c</b> , do all the fund	tions in the body	d, all the previou	
13	Digestion of food	d begins in the	and is comple	eted in the
	a, mouth - smal	lintestine	<b>b.</b> mouth - anus	
	c. pharynx - and	JS	d. stomach - sm	all intestine
14	All these organs	exist in the digesti	ve system, except	the
	a. esophagus	<b>b</b> . trachea	c. pharynx	d. liver
15	The human mou	ith contains all the	following, except	
	a. throat	<b>b.</b> saliva	c. tongue	d. teeth
16	Teeth are respor	nsible for th	e food.	
		<b>b</b> , swallowing	c. mixing	d. digesting
17	In the mouth, sa	IVA ************************************		
		d swallowing		
	c. breaks the foo	d down chemically	$\mathbf{d}$ . all the previous	s answers
18		ws food to pass fro		tl e stornach.
		<b>b</b> . esophagus		d. pharynx
19		a part of the diges	tive system that	
	a. chews food		b. converts solid	
		ents from food		
20		digestion of food o		
	a. enzymes	<b>b.</b> saliva	c. stomach acids	
21		e small intestine is		
	<b>a.</b> 10	b. 8	<b>c</b> .6	d. 12
22		ne absorbs		
		b. water	c, nutrients	d. proteins
23	The secre	te(s) juices in the	small intestine to	nelp in breaking
	down food into r		c. saliva	el en constitución
	a. pancreas	b, liver	C, SURVU	d. a and b

To keep your digestive sustant	Adaptation and Survival -
except	Adaptation and Survival - althy, you should do all the following,
a. practicing sports regularly	sa do dir the lollowing,
C. GHIRKING More works	b. not eating many fast meals
The gas exchange during a respire.  a. mouth b. trachea	d. chewing the food fast
a. mouth b. traches	ation happens inside the
The diaphragm is located at the b	c. lungs d. nose
a. trachea h stamach	ase of the
Which organ exists in both it	C. Small intestine of rike
a. Esophagus b. Trachea  28 Inhalation means oxygen	lestive and respiratory systems?
a. getting rid of	gas.
c. producing	b. supplying the body with
	d. releasing
borning initialation, air in the throat	d. releasing t reaches the two lungs through the
a esophagus	are two longs through the
a. esophagus b. pharynx  The two bronchi in the lungs are	c. diaphraam d trachea
30 The two bronchi in the lungs are	divided into smaller tubes called the
la canada de	and smaller topes called the
a. bronchioles b. alveoli	c. trachea d blood vessels
3) The alveoli are responsible for	<b>4.</b> 5.550 7035013
a. carrying oxygen to body parts	In acut
a manager process	d Slowing day
and doubt it it is in a second of the second	On process is
a. Nose> trachea> pharur	1X lungs
b. Nose lungs pharunk	
c. Nose pharynx lungs	trachea
d. Nose → pharynx → trache	a → lunas
38 During inhalation, the diaphragm	and the chest size
a. contracts - decreases	b. relaxes - increases
c. contracts – increases	d. relaxes - decreases
34 The is a muscle that plays	s an important tole in the inhelest
and exhalation processes	nolitaliani in in in inindiation
a. esophagus b. alveoli	c lungs d diaphrages
The prevent the plant's lea	ves from losing water
a. flat leaves b. tiny leaves	e wide leaves did and b
b, tilly leaves	c, wide leaves a. a and b



in applete the following sentences from the words between
Tie brackets:
a Paretre narea in shape Compreha trangua
2 A cater Ana leave to assorb sunlight (narrow was
3 grow in fresh water (Mangrove trees - water illies
4 It a pine treatman branches the snow won't slide down on ther
(short - one
5 A kapok tree has
Li 6 The mix and grind the food inside the mouth
(teeth and throat - teeth ar ditor gue
7 A tupe with muscles that help in pushing the food into the stomach is
(trachea - esophagus
8 The stille longest organ in the digestive system
(small intestine - large intestine
9 Nutrients are absorbed in the Chamber Chamber Company (1999)
10 Una gested food passes from the small intestine to the
(blood - large intestine
II Food waste is a jected outside the body through the
(small intestine – anus
12 The liver of a principles is secrete their judges in the
(stomach – small intestine
13 In the to the tree is (are) absorbed from food waste
(water - nutrients
14 Nutrier to aire carried by the from the small intestine to ail book parts.
15 The direct on sustain as I with the
16 Duning ic piraturi, gas is considered a waste product
(oxygen ~ carbon dioxide
(oxygen - carbon dioxide
18 Your breath rate increases during (sitting - running
The lungs are or e of the important organs in the system.
(respirator) - age time
7 4 96 7

9 The stomach is a long muscular tube that secretes juices.

L	ving Systems	
<u>L</u> 10	The large intestine starts from the end of the small intestine. (	
11	Fating much fast food makes your digestive system unhealthy. (	
12	The undiaested food is stored in the small intestine to get rid of it. (	
1. 13	The respiratory system is responsible for the entry of air into your bo	di
I	(	
114	When running and making an effort, the number of breathing tin	ne
	decreases (	
13 15	Exhaled air is loaded with oxygen. (	
16	Carbon dioxide gas passes from the trachea to the two lungs (	
17	When the aiaphragm contracts, carbon dioxide gas is expelled outs	id
	the body.	
18	In the lungs, bronchioles end with alveoli.	
19	The paths of oxygen and carbon dioxide are in the same direct	ioi
[	through the respiratory system.	
	Respirat on process includes inhalation process only.	
۲ 21	Gases exchange occurs in the alveoli.	
	Write the scientific term:	
1	A plant that adapted to survive in snow and has a triangular shape.	_
2	A plant that has wide leaves floating in the water to absorb sunlight	
3	A tree that grows in salty water and has strong and long roots	
4	A part of pine trees that prevents the loss of water.	
2   5	The process of breaking down food into small pieces to get nutrient	S
	from them.	
6	and breaks food into small parts to get energy	
7	The organ in which absorpt on of digested food occurs	
8	and the digestion of lood begins.	
9 [سا	A liquid that facilitates the swallowing of food.	
10	A muscular organ where food stays for a few hours to be in a soupy	
1 .	liquid form.	
(50)	Science Prim 4 - First Term	

- A long muscular tube that moves the food into the form to
  - 12 The organ where water is absorbed from the raid in trait of
  - 13 The organ where nutrients is absorbed through the bread in in
  - 14 A long winding tube that is more than 6 meters ong
  - 15 A process by which the air carrying oxygen gas enters into the bod,
  - 16 They're air sacs existing in the two lungs that extract congenigas from the air.
  - 17 A muscle that helps your lungs pull in the air and pull it out
  - 18 They are smaller branches of the bronch
  - 19 It's a common passage for both food and air in the human body

## Cross out the odd word:

- 1 Palm tree Barbary fig Acacia tree Kapok tree
- 2 Barbary fig Palm tree Polar bear Fennec fox
- 3 Pine tree Arctic fox Mangrove tree Polar bear
- # Pharynx Stomach Liver Trachea
- 3 Pharynx Lungs Stomach Trachea
- 7 Throat Teeth Saliva Tongue
- 7 Diaphragm contracts Chest size increases Inhalation Exhaiation

# Complete the following sentences using the words between the brackets:

(alveoli - esophagus - trachea - carbon dioxide - energy - teeth - blood vessels - oxygen - tongue)

- 1 In the human body, food is burned by gas to get the needed
- 2 The crush food during chewing, while the mixes the food with saliva.
- 3 Food passes from the throat to the , but ar pa ses from the throat to the
- 4 Lungs contain air sacs called that are surrounded by



# Compare between the following:

P.O.C. Palm Tree Mangrove Tree

Habitat

Roots Shape

2

P.O.C.	Water Lily	Acacia Tree
Habitat		
Leaves Shape		

3

Respiratory System	Inhalation	Exhalation
Diaphragm	\$400 KE are yellow unit from Add Broppele com more from 1650 455 455 Advances have been also broadle Advances in 1975 to 2010 Advances in 1975 to	F 1 TO 1 T
Chest Size	OF DESIGNATION AND ADMINISTRATION OF THE STATE ADMINISTRATION	
Air Rich in		

Classify the following organs according to the system they belong to:

Pharynx - Diaphragm - Stomach - Trachea - Anus Nose - Tongue - Lungs - Alveoli - Small intestine

Digestive System Respiratory System Both Systems



# Choose from column (A) what suits it in both column, (B) & (C.:

#### Column (A)

- Kapok tree
- 2 Pine tree
- Water lilu
- Acacia tree

## Column (B)

- a. lives in savannah.
- b. Ilves in Amazon rainforests.
- c. lives in the desert.
- d. lives in the snow.
- e. lives in wetlands.

#### Column (C)

- a, has needle leaves.
- b. has wide leaves
- c. has strong roots to resist water waves.
- d. has hand-shaped leaves.
- e. has tiny leaves.



# Choose from column (A) what suits it in column (B):



## Column (A)

- 1 Esophagus
- 2 Teeth
- 3 Saliva
- Small intestine
- 5 Large intestine
- 6 Stomach

#### Column (B)

- a. facilitates swallowing food.
- b. completes the digestion of food and absorbs nutrients.
- c. is a muscular organ where the acidic juice is secreted
- d. moves the food down into the stomach.
- e. starts from the end of the small intestine and ends with the anus.
- f. break and crush food during chewing.



### Column (A)

- 1 Nose
- 2 Lungs
- 3 Blood
- 4 Alveoli

#### Column (B)

- a. extract oxygen gas from the air.
- b. carries oxygen gas to all body parts.
- c. Air enters the body through it.
- d. are like two balloons.



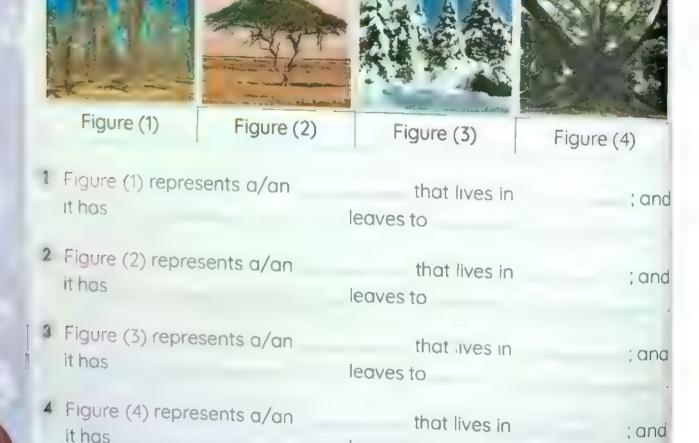


# Determine the type of adaptation in the following sentences

	Structural	Behavioral
1 Taproot roots in acacia trees		
2 Acacia trees produce polson		
3 Barbary figs have spines.		
4 The hand-shaped leaves of kapok trees.		
5 The triangular shape of the pine tree		

# P

# Study the following figures, then answer the questions below:



leaves to



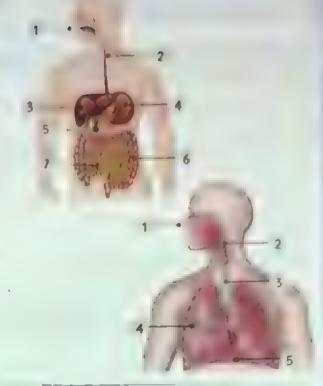
# Label the following figures

## Figure (A):

1	2

#### Figure (B):

1	2
3	4





#### Give reasons for:

- 1 The water lily has wide leaves floating on the water.
- 2 The palm tree has thick roots and small leaves.
- 3 The pine tree has a triangular shape and short branches
- Humans need food to do different activities.
- 5 Teeth, tongue and saliva have great functions
- 6 The pancreas and liver help in the digestion process
- 7 The a aphragm helps in the respiration process
- 8 We should avoid smoking and eat fruits rich in vitamin C
- 9 We should eat healthy food and avoid fast meals



## What has jumined

- 1 A palm tree has thin, weak roots?
- 2 A pine tree has an umbrella shape?
- 3 There is no saliva in the mouth?
- We eat a lot of fast meals?
- 5 The diaphragm relaxes during exhalation?

# Lesson 4

# 10 How Fish Breathe

- >> Choose the correct answer:
  - Both humans and fish.
    - can live on land
    - can live in water
    - need oxygen gas



# Differences Between Humans and Fish

#### **Fish**

#### Fish have gills

to inhale oxygen gas from water. تمتك السمكة خياشيم لاستخلاص الأكسجين من الماء.



#### **Humans**

Humans have two lungs to inhale oxygen gas from air. يمثلك الإنسان رئتين لاستخلاص الأكسجين من الهواء.

# Similarities Between Humans and Fish

Both of them take in oxygen gas and release carbon aloxide gas.

Blood carries oxygen gas to all body parts

- . كلاهما يستنشق غاز الأكسجين ويُخرج ثاني أكسيد الكربون.
  - ، يقوم الدم بنقل غاز الأكسجين لجميع أجزاء الجسم

- Fish have at Is (unique structure) to allow them to breathe underwater.
- Gills are found on both sides of a fish's head
  - تمثك الأسماك خياشيم لتساعدها على التنفس تحت الماء.
    - ، تقع الخياشيم عل جانبي رأس السمكة.



# How do fish breathe in water?



تقوم الأوعية الدموية بحمل الأكسجين إلى جميع أجزاء
 الجسم والتخلص من غاز ثاني أكسيد الكربون.



Fish need clean water to survive, just as humans need to breathe clean air.

و تحتاج السمكة إلى ماء نظيف للبقاء، كما يحتاج الإنسان لتنفس هواء نقى.



# 11 Humans Change the Environment

- Some environmental changes are caused by human activities.
- Human activities may cause the disappearance of plants and animals that once lived in this ecosystem.

ي بعض التغيرات البيئية بفعل الأنشطة البشرية.

تسبب الأنشطة البشرية في اختفاء أنواع من النباتات والحيوانات التي كانت جزءًا من النظام النبثي

# **Examples of Some Human Activities**



Cutting down forests

قطع الأشجار في الغابات.



Plowing grasslands or clearing lands

. تجريف التربة أو تسوية الأرض.



3 Building communities

بناء المدن بدلًا من الأرض الزراعية،



4 Air pollution:

Cars exhausts
Factory pollution

تلوث الهواء بسبب عوادم السيارات والمصانع.



5 Water pollution or soil pollution:

Dumping waste to waterways and soil

تلوث المياه أو تلوث التربة بسبب إلقاء النفايات في المجاري المائية أو التربة.



6 Introducing plants and animals to an ecosystem that they were never a part of

> وضع حيوانات أو نباتات في بيئة مختلفة عن بيئتها الأصلية.

# when the air, water, or soil in an area is polluted,

- . Some animals can survive by moving to another ecosystem to find what they need.
- · Plants must rely on their seeds landing in a better place for them to survive and grow.

يمكن لنعص الحيوانات النقاء على قيد الحياة بالابنقال إلى نظام بيثي احر للعثور على ما تحتاجه تعتمد النباتات على هبوط بذورها في مكان أفضل للبقاء على فيد الحياة.

# Human are also affected by pollution, as:



It makes it hard for humans to breathe.

تلوث الهواء:

Within Pelumon

It makes it hard for humans to find clean drinking water.

تلوث الماء:

مما يؤدي لعدم وجود مياه شرب نطيفة. أن مما يؤدي لصعوبة التنفس للإنسان

SOI PARENT

It makes the crops not grow.

تلوث التربية:

يؤدى لعدم نمو المحاصيل.

# People living in cities are exposed to a high level of air pollution that causes:



# The role of humbers to Edd misters to hear

- Replanting cleared forests. 2 Removing air and water pollutants.
- 3 Preserving native plants and animals [ إعادة زراعة الغابات التي أُزيلت. 2 التخلص من ملوثات الماء والهواء. 3 الحفاظ عنى الحيوانات والنباتات الأصلية،

# Exercises on Lesson 4

1	Choose th	e correct answer:		
	Fish extractions as skin Unlike humans as clear air Both humans as need clear air Gills are for a tail Humans come as plowing as plo	b. gills  ians, fish don't breathe b. gills  d clean water to breat b. polluted air ins and fish to ean water to breathe all bon dioxide gas und on both sides of a b. eye an help in restoring the grasslands down trees ing the levels of air po	c. lungs e underwater using c. lungs the, humans need c. clean water survive. b. inhale oxyge d. exhale oxyge d. exhale oxyge c. head e ecosystem by b. replanting cle d. throwing was	d. fins g their d. paddles to drink d. polluted water n gas en gas er its bony flaps d. paddles eared forests stes in water
	pol a. Air What happ their environa. Their nu c. Their nu d. They co	b. Water  b. Water  bens to living things the comment?  comment increases.	ns c. asthma or humans to breat c. Soil at can't adapt to the b. They can't stay is inment.	d. all the previous he. d. Noise ne conditions of n the environment
V.B	the black	the following sentets: s is expelled out the fis	h into the water.	
	Doth I		(Oxyger	- Carbon dioxide)

adaptations.

(behavioral - structural)

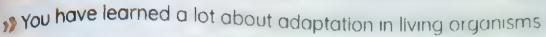
2 Both human's lungs and fish's gills are

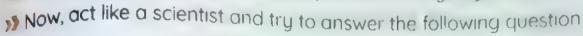
3 Oxygen gas is extracted from water t	through a fish's
A CONTRACTOR OF THE PARTY OF TH	(gills - mouth)
A Carbon dioxide gas is released from	a fish's Into the water.
	(gills - mouth)
5 Watering plants with polluted water r	nay cause pollution
	(soil - air)
6 Plants depend on their to be p	lanted in a better place to survive
	(1011/65, ,001)
7 pollution makes it hard for hu	
	(Soil - Water)
8 In fish, the blood vessels carry oxyg	
parts.	(lungs - gills)
9 pollution affects fish health	(Water - Air)
10 Humans can replant removed forests	
	(damage - restore)
11 Human activities have a effect	t on the ecosystem.  (positive - negative)
	(positive riegative)
Put (✓) or (X):	
Put (/) or (x):  1 Gills are found at only one side of a fi	sh's head.
<ul> <li>1 Gills are found at only one side of a figure 1.</li> <li>2 Fish have gills to expel oxygen under 1.</li> <li>3 Both humans and fish need clean was</li> </ul>	water. ( ) ter to survive. ( )
<ul> <li>1 Gills are found at only one side of a figure 1.</li> <li>2 Fish have gills to expel oxygen under 1.</li> <li>3 Both humans and fish need clean was</li> </ul>	water. ( ) ter to survive. ( )
1 Gills are found at only one side of a fit 2 Fish have gills to expel oxygen under 3 Both humans and fish need clean wa 4 People living in cities are exposed to	water. ( ) ter to survive. ( )
1 Gills are found at only one side of a fit 2 Fish have gills to expel oxygen under 3 Both humans and fish need clean wa 4 People living in cities are exposed to a Asthma is caused by water pollution.	water.  ter to survive.  a high level of air pollution.  ( )
1 Gills are found at only one side of a fit 2 Fish have gills to expel oxygen under 3 Both humans and fish need clean was 4 People living in cities are exposed to a 5 Asthma is caused by water pollution. 6 Man cannot restore the ecosystem in	water.  ter to survive.  a high level of air pollution.  ( )  any way  ( )
1 Gills are found at only one side of a fit 2 Fish have gills to expel oxygen under 3 Both humans and fish need clean wa 4 People living in cities are exposed to a Asthma is caused by water pollution.	water.  ter to survive.  a high level of air pollution.  ( )  any way  ( )
1 Gills are found at only one side of a fit 2 Fish have gills to expel oxygen under 3 Both humans and fish need clean wa 4 People living in cities are exposed to a Asthma is caused by water pollution. 6 Man cannot restore the ecosystem in Complete the following sentence the brackets:	water.  ter to survive.  a high level of air pollution.  any way  es using the words between
1 Gills are found at only one side of a fit 2 Fish have gills to expel oxygen under 3 Both humans and fish need clean way 4 People living in cities are exposed to a 5 Asthma is caused by water pollution. 6 Man cannot restore the ecosystem in 6 Complete the following sentence 6 the brackets: 6 Jungs - asthma - Smog -	water.  ter to survive.  a high level of air pollution.  any way  es using the words between  air - blood vessels)
1 Gills are found at only one side of a fit 2 Fish have gills to expel oxygen under 3 Both humans and fish need clean way 4 People living in cities are exposed to a Asthma is caused by water pollution. 6 Man cannot restore the ecosystem in Complete the following sentence the brackets:  (lungs - asthma - Smog -	water.  ter to survive.  a high level of air pollution.  any way  es using the words between  air - blood vessels)  gen to all body parts.
1 Gills are found at only one side of a fit 2 Fish have gills to expel oxygen under 3 Both humans and fish need clean wa 4 People living in cities are exposed to a Asthma is caused by water pollution. 6 Man cannot restore the ecosystem in Complete the following sentence the brackets:	water.  ter to survive.  a high level of air pollution.  any way  es using the words between  air - blood vessels)  gen to all body parts.  gas from the

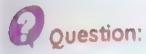
## Living Systems Cross out the odd word: 1 Gills - Alveoli - lungs - Trachea 2 Lung damage - Asthma - Dying crops - Heart problems Write the scientific term: 1 The organ that helps humans to respire 2 A unique structure that helps fish to extract oxygen from water. 3 They carry oxygen gas to all body parts of a fish. The gas that humans and fish need to survive 5 The gas released from the gills of fish into water Choose from column (A) what suits it in column (B): Column (A) Column (B) 1 Lungs a. is carried by blood to all body parts. 2 Gills b. carry oxygen to all body parts of the fish. 3 Blood c. is exhaled by humans and animals. Oxygen gas d allow humans to extract oxygen from the air. 5 Carbon dioxide e. allow fish to survive underwater. gas 3 Mention two ways for humans to restore the ecosystem: One reasons for: 1 Humans have lungs, while fish have gills 2 Human activities are dangerous to the environment 3 Some people living in cities are affected by lung damage. 4 Exhausts of cars and factories cause breathing problems What happens if: 1 Humans have gills like fish? 2 Car and factories exhausts level increases (concerning the impact on human's health)? 3 The air pollution increases (concerning the respiratory system)? 62 Science Prim. 4 - First Term

# Lesson 5

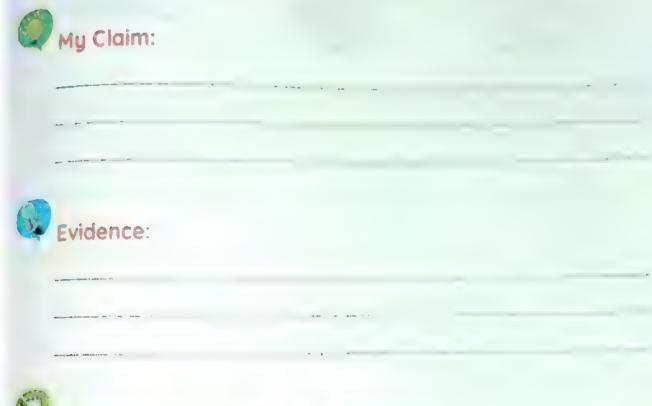
# 12 Record Evidence Like a Scientist: Penguin







How do different types of animals and plants adapt to survive in extreme climates?





### Mill make right plant black to an out of the state of



# in Action

13 Careers and Adaptation

# **Amphibians**

chh. id

I They are animals that live in water and on land, such as:

Frogs



Toads



Salamanders



- They can live in moist (wet) environments, such as: rainforests, streams and ponds.
- Amphibians are covered with skin that water and gases can pass through.

· البرمائيات هي حيوانات يمكنها أن تعيش في الماء وعلى اليابسة، مثل: الضفادع - ضفدع الطين - السلمندرات.

- ، تعيش في البيئات الرطبة (الغابات المطيرة مجرى المياه البِرك).
- البرماثيات مغطاة بالجلد الذي يمكن أن يمر من خلاله الماء والغازات.

**Respiration in Amphibians** 

Adult amphibians can breathe through their lungs (like humans).

تستطيع التنفس من خلال الرئتين كالإنسان.

Privicie.

- >>> They can take in oxygen from water using their skin. (Structural Adaptation)
  - تستطيع أيضًا استخلاص الأكسجين من المياه عن طريق
     الجلد (تكيف تركيبي).

## Adaptation and Survival

- >> Amphibians need clean water to stay healthy.
- >> Amphibians are very sensitive to any environmental pollution, such as
  - 1 Air pollution
- ,2' Water polition (Vrises in water,
  - · تمتاج البرمائيات إلى مياه نظيفة لتظل بصحة جيدة،
    - · البرمائيات صداسة للغاية لأي تلوث بيثي، مثل:

1 تلوث الهوام 2 تلوث الماء (القبروسات في المياه)





# 90 species

They became extinct in the last 20 years.

، يوجد ٩٠ فصيلة انقرضت آخر ٢٠ عامًا.

# 124 species

>>> They are endangered

• يوجد ١٣٤ فصيلة معرضة للانقراض.

# The main of striction street in property of the many of the grant of t

- Scientists are working to save ampibians from extinction by studying:
  - How amphibians adapt and interact with their environment.
  - What makes amphibians sick in their environment.



- · يعمل العلماء على حماية البرمائيات من الانقراض عن طريق دراسة:
  - كيفية تكيُّف وتفاعل البرمائيات مع البيئة المحيطة.
    - ما يصيب البرمائيات بالضعف في بيئتهم.

# **Protecting Amphibians from Extinction**

- 1 Avoid throwing waste materials into the water.
- 2 Get rid of the chemicals in a correct way to avoid water pollution.

، حماية البرمائيات من الانقراض:

🗍 تجنُّب إلقاء الخلفات في المياه.

2 التخلص من الكيماويات بطريقة صحيحة لتجنب تلوث المياه.

	Choose the correct answer:								
1	1.	need clean water to survive.							
		<b>a.</b> Humans <b>b.</b> Fisher Frogs can respire in wa	sh	c. Frogs	d. a, b and c				
	22								
•		a. lungs b. gil	lls	c. skin	d. a and c				
	3	A frog may stand on the leaf of a/an							
		b. po	olm tree	c water lilu	d. barbaru fia				
	4	r mog coold be a prey	for	,					
		a. agama lizards		b. fennec for	(es				
		c. caracals		d. panther chameleons ecomes zero, that species is					
	5	When the number of c	species be						
		D. el	idangered	c extinct	d. vulnerable				
	6	and salar							
		b. bi	rds	C manage of	d amphibian				
	7	Both and can survive on land.							
		a. harr - Humans		b. frogs - humans					
		c. frogs – fish		d fich have					
	0	species are org	ganisms wh	000 = 1					
			radingered	c. Survived	d. Safe				
	,	riogs, harrand numan	or and numans						
		a. extract oxygen from	n water	b. can respire	e through their lungs				
	10	3. 4.01 3/11		OT IDDOM AVUOLES					
		To protect amphibians from extinction, we must  a. throw wastes in water and air							
		b. transfer frogs to the	ter and air						
		c. dispose of chemica	of chemicals in the same i						
	c. dispose of chemicals in the correct way d. destroy their natural habitat								
		January Habitat							

		Complete the following sentence show the							
		the brackets:							
	1	ne ability of a frog to extract oxygen by its skin sig							
		adaptation. (structural - behavio							
	2	Amphibians could exist in	:> 1 † /	1					
	3								
	4	can survive on land only							
	-	Salamander is considered a/an (for amp)							
	6	Amphibians' bodies are covered with							
	7	As pollution levels increase, the number of enaangered species in an							
		ecosystem (increases - decreases)							
	8	The season is very dangerous for amphibians (dry - raing)							
	9	The presence of in water causes amphibians extinction							
		(oxygen gas - viruses							
Put (/) or (X):									
200	1	Amphibians use their gills to breathe in water ke fish.	(	)					
	2	Frogs and toads are considered reptiles that live in rainforests	(	)					
	3	Agult frogs respire by both their lungs and skin							
	4	Both amphibians and humans can survive out of the water	(	)					
	5	The skin of a frog must be dry to survive.							
	6	We must dispose of chemicals in the correct way to avo a water							
	pollution.								
	7	The number of amphibians increases with increasing pollution	(	)					
	8	Amphibians are very sensitive to any environmental poliction	(	)					
1		Complete the following senten structure.							
		the brackets:							
		(gills - Salamanders - water - air - lungs - skin)							
	補	have two breathing methods.							
	2	On land, a toad uses its to get oxygen from the							
	3	Fish uses their to get oxygen gas from the							
	-	rish uses their to got ongot s							

# 6 Cross out the odd word:

- 1 Frogs Salamanders Fish Toads
- 2 Kapok tree Palm tree Frogs Panther chameleons

# Write the scientific term:

- 1 They're small animals that live in moist environments.
- 2 It's the gas needed for respiration for animals and humans
- 3 It's the organ that allows frogs to breathe underwater.
- 4 It's the organ that allows frogs to breathe on land
- 5 It's the species that has a great loss in the number of its members.

# Choose from column (A) what suits it in column (B):

#### Column (A)

- 1 Amphibians
- 2 Fish
- 3 Humans

### Column (B)

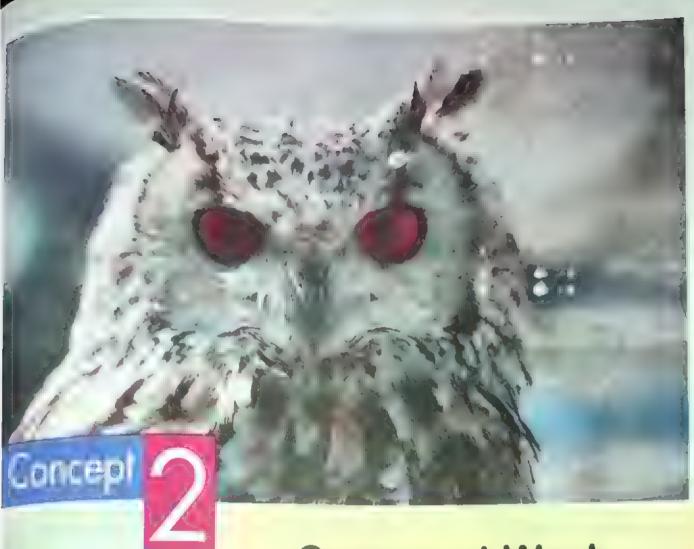
- a. can survive on land only.
- b. can survive underwater and on land.
- c. can survive underwater only.

# Give reasons for:

- 1 Scientists learn a lot about how amphibians adapt
- 2 Amphibians can live on land or underwater.
- 3 Amphibians can't survive in the savannah.

# What happens if:

Water pollution increases (concerning amphibians)?



# Senses at Work

## By the end of this concept, students will learn about:

- Dolphin super senses.
- <sup>1</sup> Super sensory organs in some animals.
- Nocturnal animals
- The nervous system and how does it work.

## Brain

- Reflex Senses
- Information
- Nerve
- Sound
  - Receptor

# Concept 2

# Senses at Work

Activity 1 Can you explain?

Activity 2 Dolphin Senses

Activity 3 What Do You Already Know About Senses at Work?

Activity 4 Senses of Nocturnal Animals

Activity 5 The Nervous System

Activity 6 Sensing the Environment

Activity 7 How the Nervous System Works

Activity 8 Describing the Nervous System

Activity 9 How Animals Use Communication Systems

Activity 10 Technology Inspired by Nature

# esson

# 1 Can You Explain?

Animals, like humans, can sense the renvironments with their sense organs, such as:

- 1 Using the reyes to see
- 2 Using their ears to hear
- الحيوانات مثل الإنسان بمكن أن تستشعر المعلومات وتعالجها بأعضائها الحسية، مثل:
  - 2 استخدام الأثنين للسمع،

Replication of

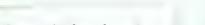
1 استخدام العبنين للرؤية.

## Egyptian mongooses produce

that seem like



- To communicate and move to search for food.
  - تُصدر حيوانات النمس أصواتًا تبدو مثل الثرثرة للتواصل سويًّا من أجل التحرك والبحث عن الغذاء.





Protect themselves.



Communicate together.



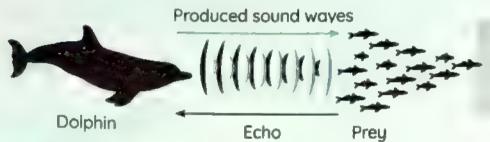


## 2 Dolphin Senses

- We use our sense of hearing to gather information about what is happening around us.
- >>> Some animals seem to have super senses that help them survive.

## Dolphins' super senses

- To survive in dark, murky waters, dolphins use the sense of echolocation which depends on echo to:
  - Find food.
- 2 Protect themselves.



Echo: It is the reflection of sound waves

- Dolphins produce sound waves through the water.
- 2 When these waves hit any object, they return to the dolphins in the form of an echo.
- Echo helps dolphins locate their prey and other objects.

، تقوم الدلافين بإرسال موجات صوتية عبر المياه،

و عندما ترتطم الموجات بأي جسم فإنها ترثد إلى الدلافين في صورة صدى الصوت.

بساعد صدى الصوت الدلافين على تحديد موقع الفرائس أو الأجسام في المياه.

# **Science Facts**

Dolphins have a sharp hearing sense that allows them to hear all kinds of sounds.





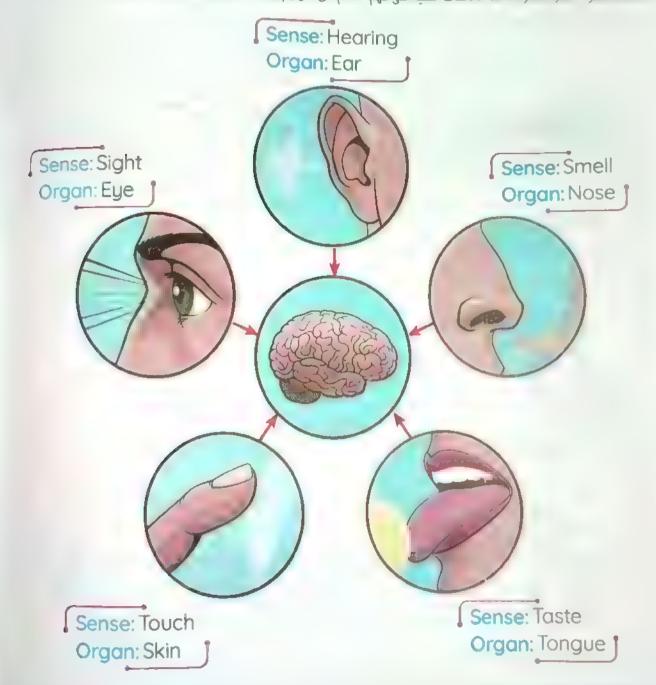
# What Do You Already Know About Senses at Work?

# Senses and Organs

- Each sensory organ is responsible for receiving a special type of information from the environment, and then sending it to the brain
- The brain translates the information and helps living organisms understand the world around them, communicate, and survive

· يخ عصو حسى ١٩٠٠ ع، رافي به ع ماص من المعلومات من النبئة ثم إرسال تلك المعلومات إلى العقل

م من حمال مقر العلومان وبساعد الكائنات الحية على فهم العالم من حولهم والتواصل والبقاء على قيد الحياة.



#### Animals Perceptions

Animals can use more than one sense to achieve a purpose that helps them survive in their habitats.



Sense: Sight - Hearing

Purpose: To avoid danger

Fox



Sense: Sight - Taste

Purpose: To find food

Panther Chameleon



Sense: Sight - Smell

Purpose: To recognize friends



Service Sight - Smell - Hearing - Taste - Touch

Purpose: To identify things

Monkey



# Exercises on Lesson 1

P		Choose the construction
	1	When you touch an ice cube with your index finger, your tells you it is cold.
		a. index finger b. hand c. brain d. skin
	2	use a property known as echolocation to hunt in water.
		a Bull sharks b. Dolphins c. Polar bears d Bats
	3	Mongooses communicate together by producing
		a. flashlights b. a smell c. sounds d. heat
	4	All of these living organisms have a super sense of hearing, except
		a. dolphins b. foxes c. dogs d. humans
	5	Your sensation of hot weather depends on sensory receptors in the
		a. eyes b. skin c. nose d. ear
1	6	The organ that is responsible for the sense of sight is
		a, the ear b, the tongue c, the nose d, the eye
	7	When you determine a sweet or bitter taste, you have used
		a the tongue b. the eye c. the ear d. the nose
	8	We can distinguish between vinegar and perfume by
ı		a. sight b. smell c. touch d. hearing
4	,	
10		the brackets:
	1	The echo sound feature depends on the
		(hearing sense - sight sense)
	2	Echolocation is a property that uses bounced waves off an
		object. (water - sound)
	3	When sound waves hit a object, they are reflected back to the
		source. (solid - liquid)
	4	We can differentiate between a hot and cold cup of water by the
		sense of (touch - smell)
	5	Dogs use their sharp senses of hearing and to recognize
	3	(smell - touch)
		friends.

— Living Systems		
6 Echo is the	of sound waves.	(refraction - reflection
7 The sharp	sense of hearing in dolphin is	
		(structural - behaviora
18 Most anima	als have senses than h	<mark>numans</mark> (weaker - sharpe
9 Dolphins co	an locate their prey in dark wo	
Put ( () on	/v\-	(hearing - sight
Put (/) or		
	ave a strong sense of sight.	(
	nd bull sharks use echolocatio	
	he sense organ that is respon	
of the cloth	the sensory organ that make	s you feel the smoothness
hearing.	an identify food that is not go	od through the sense of
	identify the scent of a flower (	using his copes of sight (
7 We can kno	ow if the food is spicy or not u	using his sense of tasta.
Complete	the following sentences	using the words between
the bracke	ets:	doing the words between
	(smell - monkey - echo	plocation)
1 All the sense		identify things.
	sharp senses of	and sight
	epend on the property	to hunt in dark water.
Cross out	the odd word:	
1 Dolphins - S	Sound waves - Echolocation -	- Bull shark
2 Touch - Nos		
3, Hearing - To	ouch - Tongue - Sight	
	cientific term:	
1 It is the refli	ection of sound waves back	from a solid surf-
source.	- NOTES DUCK	Torri a solia surface to their
2 A property t	that helps dolphins locate their	r preu in the dark
3 The sense th	hat helps dolphins detect echo	o.
	30110	

- A The sensory organ that helps humans identify the taste of food
- 5 The sense that helps us identify the scent of flowers
- 6 The sensory organ that helps chameleons catch insects



## Choose from column (A) what suits it in column (B):



#### Column (A)

#### Column (B)

- The fennec fox
- 2 Dolphins
- 3 The Egyptian mongoose
- 4 The panther chameleon
- a. produces sounds that seem as chatter.
- b has super senses of hearing and sight
- c. has sharp senses of taste and signt
- d, locate prey using echolocation

#### Column (A)

- 1 | can \_\_\_\_\_ a bird flying up in the sky.
- 2 I can \_\_\_\_ a beautiful song on the radio.
- 3 I can \_\_\_\_ a flower with my nose.
- 4 I can \_\_\_\_ a delicious sandwich.
- 5 I can \_\_\_\_ the soft fur of a rabbit.

#### Column (B)

- a. smell
- b. touch
- c. hear
- d. see
- e. taste

8

#### Give reasons for:

- 1 Egyptian mongooses make sounds like chatter.
- 2 Dolphins can locate their prey in the dark water



#### What happens if:

- 1 The sounds produced by a dolphin hit a fish in the water?
- 2 Dolphins have a weak sense of hearing?

#### 4 Senses of Nocturnal Animals

If you want to find your cat in a dark room, your ears would detect noise, but it would be hard to see anything.



Some animals are active at night, and they are called



allow these animals to navigate the darkness safely and find food.

تنشط بعض الحيوانات أثناء الليل، وتُسمى تلك الحيوانات بالحيوانات الليلية.

Jerboa

(Rodent)

تسمح التكيفات الحسية الفائقة لهذه الحيوانات بالتنقل في الظلام والعثور على الطعام.



#### Why do some animals hunt at night



The animal may live in an extremely hot place, so it prefers to look for food at night when the weather becomes cooler.

Some prey are only available at night.

Some animals depend on complete darkness to surprise their prey.

- [ً] قد يعيش الحيوان في منطقة حارة؛ لذلك يفضل البحث عن الطعام ليلًا عندما يصبح الجو باردًا
  - 2\_ تتوفر بعص القرائس في الليل فقط
  - آ تعتمد بعض الحيوانات على الظلام الدامس للتخفي ومفاجأة الفريسة.



- Bats can't see very well in the dark, so they rely on
   echolocation to find insects.
- They can hear the echo bounced from objects, so they can find food and move around.

لا يرى الحقاقيش بشكل حيد في الظلام؛ لذا فإنها تعتمد على حاصية تحديد الموقع بالصدى للعثور على الحشرات.

تستصيم الحقاويش سماع الصدى الرئد من الأحسام، وبالتالي تستطيع العثور على الغذاء والحركة.



Owls have extraordinary

and

senses

لدى البوم حاستًا بصر وسمع خارقتان.

· Owis have large eyes OR

To allow them to see tiny, far-away movements.

لدى البوم عيون كبيرة تسمح برؤية الحركات الضئيلة والبعيدة.



- 1 Pick up distant sounds and amplify them.
- 2 Direct these sounds directly into the owl's ears.

يساعده وجهه الذي يشبه الوعاء والريش الموجود في رأسه على:

آ التقاط الأصوات البعيدة وتضخيمها.

2 توجيه تلك الأصوات إلى أَدْنِّي البومة مباشرة.



لدى البوم القدرة على لف رأسها في كل الاتجاهات؛ مما يساعدها في البحث عن الفرائس في كل الاتجاهات.







#### The Nervous System

Manimas such as humans, elephants, and dogs have the same nervous system.

يهتبر أعضاء الحواس الخمسة، مثل. العين والأنف والأدن واللسان والحلد، حرءًا هامًا من الجها العديدي

#### The Nervous System Consists of:

#### Brain

#### Function:

It is the main control center of the body

. الوظيفة: مركز التحكم الرئيسي في جسم الإنسان.

#### **Spinal Cord**

• It is a big nerve that runs through the backbone.

Function:

It carries messages to and from the body and brain.

•إنه عصب كبير يمر عبر العمود الفقري.

«الوظيفة: ينقل الرسائل من وإلى الجسد والمخ.

1 They are distributed throughout the body.

They connect the sense organs with the brain.

#### Function:

 They carry messages from the brain to spinal cord and body parts and vice versa.

تتوزع في جميع أنحاء الجسم.
 • تربط أعضاء الحس المختلفة بالمخ.
 • الوظيفة: تنقل الرسائل من المخ إلى النخاع الشوكي وأجزاء الجسم أو العكس.

The brain is connected to a big nerve that runs through the backbone called the spinal cord and branches out into smallernerves distributed all over the body.

- يتصل المح بعصب كبير يسمى النخاع الشوكي، ويتفرع النجاع الشوكي إلى أعصاب أصغر بتورع في حميع أنجاء الحسم،



. Few nerves are connected directly to the brain, such as the nerves of the eyes. تتصل بعض الأعصاب مباشرة بالمخ مثل أعصاب العيدين.

#### Sensory Receptors

they are nerves that receive information from the environment

#### How does the nervous system work?

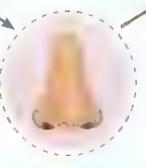
مستقبلات حسية: مي الأعصاب التي تستقبل الملومات من البيئة المعيطة.

- i Sensory receptors receive information from the environment.
- 2 Nerves carry a message from sensory receptors to the brain.
- 7 The brain translates the message and tells the body what to do.

#### Example: When you smell pizza,



 The pizza odor travels to the nose. • تنتقل رائحة البيتزا إلى الأنف.



- The brain translates the message and tells the body what to do.
- يعالج المخ المعلومات ويحدد ما يجب فعله.
- Sensory receptors at the back of the nose receive the message.
- · Sensory receptors send the message to the brain through nerves.
  - تستقبل المستقبلات الحسية الموجودة خلف الأنف تلك المعلومة.
    - تقوم المستقبلات الحسية بإرسال إشارة للمخ عبر الأعصاب.

## Activity 6 Sensing the Environment

When the girl touches the spines of a cactus plant, she will move her hand quickly (in less than one second).



مندما تلمس البنت الشوك في ببات الصبار تقوم بإبعاد يديها بسرعة.

>>> When a jerboa hears a snake moving nearby, it jumps quickly and escapes (in less than one second).



عندما يسمع البربوع صوت الثعبان يقوم البربوع بالقفز سريمًا والهروب.

- >> The nervous system is responsible for keeping living organisms away from danger.
- >>> Both humans and animals use their sense organs and nervous systems to sense the surrounding environment and avoid danger.

• الجهاز العصبي هو المسئول عن الإحساس بالخطر والابتعاد عنه.

• يعتمد كلُّ من الإنسان والحيوان على الحواس والجهاز العصبي للإحساس بالبيئة وتجنُّب الخطر.

#### **Reaction Time**

It is the time taken by an organism's body to respond to danger. زمن الاستجابة: مو الوقت الذي يستفرقه الكائن الحي للاستجابة للخطر.

# Jumping Jerboa

represents structural adaptations

epresents behavioral adaptations

) It is a desert rodent.

من القوارض المبحراوية.

· To hear the quiet movement of snakes (vipers)

ه له آذان طويلة تساعده على سمام حركة الثعبان القريب منه.

#### n has long hind be

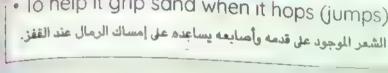
• To enable it to jump for a long distance.

و له سيقان طويلة لساعدته على القفز لمسافات طويلة.



#### s It has hair on feet and toes

To help it grip sand when it hops (jumps).



 Jerboa hops in zigzag patterns to escape quickly from danger.

• بقوم البربوع بالقفز في مسارات متعرجة للهروب سريعًا من الخطر

 Jerboa searches for food at night.

- يقوم البربوع بالبحث عن غذائه في الليل.



#### How jerboa's body work together to avoid danger



- On hearing the roise of a snake moving nearby,
- Sensory receptors in the ears send a message to the brain through nerves.



- 2 The brain translates information and responds by alerting legs to jump
- 3 Jerboa's strong hopping legs start to jump away to escape from danger
  - تقوم الحواس المستقبلة في أذن البربوع بإرسال رسالة للمخ عبر الأعصاب.
  - يترجم العقل تلك المعلومة ويعطى استحابة للبربوع بالقفر للابتعاد عن الخطي
    - تبدأ سيقان البربوع بالحركة والقفز للهروب من الخطر.

# Exercises on Lesson 2

Choose the correct answer:		
have the ability to turn the	ur heads in all dir	ections
a Snakes b. Jerboas	c Dolphias	d. Owls
Bats are animals.	C. Dolphins	<b>3.</b> 3 <b>1.</b> 3
a nocturnal b. morning	c harmful	d. not flying
3 Both and use echo to s	earch for food	<b>G</b> ot righting
a. jerboas - owls	b. owls - dolphi	ins
c. dolphins - bats	d. owls - bats	
A Nocturnal animals are different from	om humans in the	at theu have
a. systems	b. sensory orgo	
C. sharp senses	<b>d.</b> weak senses	
5 Nocturnal animals become active	at night to	
a. Stay warm during the daytime	b. attack their p	redators
c. surprise their prey	d. escape from	preu
6 All the following are components	of the nervous s	ystems except, the
·		
a. spinal cord <b>b.</b> heart	c. nerves	<b>d</b> . brain
7 The system helps us trans	late messages th	nat come fro <mark>m our</mark>
sorroundings, such as smells and s	ounds.	
a. respiratory <b>b.</b> digestive	c. nervous	d. circulatory
© 8 Our eyes help us see what's are	und us. What is	the organ that is
responsible for processing what we a. The lungs		
c. The stomach	<ul><li>b. The esophage</li><li>d. The brain</li></ul>	JS
9 What carries the message from yo	Ur elles to hour b	
something?	or eges to gour p	rain when you see
a. The nerves b. The muscle	c. The veins	d The gland
10 The is/are connected to the bro	in and located in	d. The glands
a. spinal cord b. heart	c. nerves	d. lungs
84) Science Prim 4 - First Term	-	

II.	The nerves of the	are connec	cted directly to th	e brain
Gh	a. ear	b. skin	c. eye	d. nose
12	The is the	main control cen	ter in the body of	living organisms
75	a. heart	b. esophagus	c. stomach	d. brain
13	Which of the follo	wing is considered	d o behavioral ac	daptation?
13,0	a. The long hind	eg of a Jerboa		
	b. The bowl-shap	ed faces of owls		
	c. The extraordin	ary senses of noc	turnal animals	
	d. Hunting during			
14	The correct order	of nerve messag	ge path for the fo	llowing figure is
				1
	a Nerves n			
	b. Ears nerv			
	c. Tongue> n			
		rain nerves		
15	Jerboas and	exist in the sa		
	a. Arctic foxes		<b>b.</b> fennec foxes	
	c. panther cham		d. polar bears	
16	All of the followin	g have large ears	, except the	
		b. caracal		d. polar bear
17	Sameh drives his	bike, and when h	e hears a car be	hind him, he turns
	away so as not to	o hit it. The systen	n that received a	signal made
	Sameh realize the	at it was the		
	a. nervous syste	m	<b>b.</b> respiratory s	
	c. digestive syste	em	d. circulatory s	ystem
18	The Egyptian jerl	boa is considered	a .	
	a. reptile	b. bird	c. rodent	d. lizard
19	At night, the jerb	oa could be prey	for .	
	a. insects and ra	bbits	<b>b.</b> snakes and t	
	c. polar bears ar	nd owls	d. Arctic foxes	and bats
20	When jerboa ser	nses the noise of o	a snake nearby,	
	a. it puffs its boo		b. it changes it:	
	c. it jumps fast o		d. it opens its n	nouth wide

21	The response of the jorboa to jump quickly and escape takes
	a. one second b. 2 seconds
_(-)	c. 0.2 second d. 10 seconds
22	help() jerbou stay cafe from any danger.
1	a Its adapted body parts b. Its nervous system
	c. Its sensory receptors d. All the previous
-0	Complete the following sentences from the words between
	the brackets:
1	The skin is an important organ of the system of human.
	(respiratory - nervou
2	Being active at night in some animals is a adaptation.
	(structural – behaviora
1 - 1 3	An owl can rotate its in all directions. (eyes - head
	An owl has a shaped face to hear its prey. (DOW! - OVO
5	An owl has on its head to direct sounds to its ears.
	(feathers – scale
6	oses echolocation to find its prey in the air (do phin - ba
	A/an can see a rat moving in grass at night. (owl - ba
<b>1</b> 8.	The eye sends messages to the through the nerves.
[] 9	(brain - spinal core
F	The is one of the organs that we can use to watch television.
10	The spinal cord outstall and it
	The spinal cord extends inside the The spinal cord branches into smaller The spinal cord branches into smaller
12 9	Sensory receptors in the receive the odour of a pizza
13 1	n order for the human being to remain alive, there is an integration
b	between the senses and the system to interact with the
S	surrounding environment. (respiratory - nervous
[]] 14 A	is an animal that can escape from enemies because of the
le	ength of its hind legs.  (Arctic fox - Jerboa)
. 0	Science Prim 4 First Term

Living Systems

	15	As the reaction time , jerboa can escape from snakes		
	10	(decreases - increa	ses)	)
	16	If the reaction time of the Jerboa is , it will be dinner for a vij	per	
		(delayed - faster	ned	)
	17	In case of danger, jerboa jumps in a path (straight - zig	209	)
	18	Large ears in jerboa are a adaptation (behavioral - struct	ural	)
	19	Jerboa lives in the (forest - de	sert)	)
		Jerboa's feet and toes are covered with to catch sand		
		(hair -	fats	;)
6		put (√) or (X):		
3	-	Nocturnal animals hunt at night to surprise their prey in the dark	(	)
	2	Bats wait for the echo produced by insects to attack them	(	)
	3	Both the spinal cord and nerves carry messages in one direction.	. (	)
	4	The nerves of the eyes are directly connected to the brain.	(	)
	5	The human nervous system is similar to that of elephants.	(	)
	6	Sensory organs gather information and the brain interprets it.	(	)
	,	The sense of sight in owls is stronger than that in bats.	(	)
	8	Information is transmitted from the sensory organs to the brain	/ia	
		the nerves.	(	)
_		Jerboas have large ears and long-hind legs.	(	)
	10	You can differeniate between vinegar and water through your se	ense	}
1		of sight.		)
		The nervous system works separately from the five senses.		)
		The brain is responsible for processing information.		)
	13	When jerboa jumps in zigzag paths to escape, this is considered	,	
		a structural adaptation.		)
		The nervous system of jerboa helps it stay safe.	(	)
		The snake could be prey for desert jerboa	(	)
		Reaction time always takes more than one second.	(	)
	17	On hearing danger, the sensory receptors in the jerboa's ears se	end	
	1	a message to the brain.	(	)



## Complete the following sentences using the words between the brackets:



(rodent -	nerves -	brain -	mammal	- message	- owl)

- 1 Sensory receptors send a to the through the
- Bat is a \_\_\_\_ while Jerboa is a \_\_\_\_.
- An \_\_\_\_ has a bowl-shaped face.



#### (survive - ears - long - danger - reaction time - zigzag decreases - increases)

- 1 The time taken by a jerboa to run away from a snake is called the
- 2 As the reaction time to a danger \_\_\_\_\_, an animal has a greater chance to \_\_\_
- 3 Jerboa has large and hind legs.
- Jerboa can jump in a \_\_\_\_\_ path to escape quickly from any danger
- 5 The nervous system always keeps animals away from . . .

#### Write the scientific term:

- Animals that search for food at night.
- 2 A property that helps dolphins and bats locate their prey in the dark.
- 3 A flying mammal depends on echolocation to locate mosquitoes.
- A nocturnal bird that has a bowl-shaped face with feathers.
- 5 The system that is responsible for feeling if the water is cold or hot.
- 6 The main control center in the animal's body.
- 7 It passes through the backbone and is connected to the brain.
- 8 The branches that extend all over the body parts and carry messages.
- 9 Nerves that receive information from their surroundings.
- 10 A desert rodent that has very large ears and long hind legs.
- II) The system that keeps living organisms safe from danger. 12 The time taken by living organisms to respond to danger.
- 13 The organ that translates information and gives a suitable response.
- 14 The type of adaptation in which jerboa hops in a zigzag path.

11	
8	A
V	

#### Cross out the odd word:

- Owl Bat Panther chameleon Jerboa
- 2 Nose Tongue Skin Heart
- Jerboa Penguin Arctic fox Polar bear



#### Classify the following in this table:

Sight - Tongue - Nose - Smell - Eye - Ear - Touch - Skin - Hearing - Taste

Senses

Sensory Organs



# Classify the following animals according to the strategy of hunting:

Dolphins - Fennec fox - Chameleon - Bull shark - Bats

Strategy of	
Hunting	

**Echolocation** 

Camouflage

**Animals** 



#### Choose from \_\_umn (A) what suits it in column \_\_ :



#### Column (A)

- 1 The brain
- 2. The spinal cord
- 3 The nerves
- Sensory receptors

#### Column (B)

- a. are nerves found in sensory organs that receive information.
- b. is located inside the backbone.
- c. is the main control center of the body of living organisms.
- d. are distributed all over the body.

2

3

4

Livi	ng Systems				
0					
	Column (A)	1	Colu	mn (B)	
	An owl	a com	municates by pro	ducing sound	ls as chatter.
2	A bat		echo to catch in		
	A dolphin The Egyptian	[	turn its head in a		
	mongoose	d uses	echo to locate it	s prey in the	dark water.
1	2	3	4		
C					
(	Column (A) Jer Structural adapt			olumn (B) ne reason) —	
1	Long hind leg	s	a. to catch sand	during jumpir	ng.
	Hair on its fee		b. to jump for a l	_	
3	Very large ea	rs	c. to sense any n	oise from a ne	earby snake.
J	2		for the Thomas the appropriate parties of the Control of the Contr		
Si Si	tudy the follo	wing fig	ure, then answ	er the ques	tions:
1 V	What does the c	pposite f	igure represent?		<u> </u>
			the human body	only?	b
3, 1	abel the followi				
		D.,	व वीकारकार करने काम काम वाल वाल वाल वाल प्रश्नेस कर्तन होंगा है है है एक प्रश्नाचीक का बता है	,	c
A SI	udy the follow	ina fiara	res, then compl	oto the sout	
111	DECY LIFE TOTION	nng nga	es, mer compr	ete trie sente	ences below
		437	30		(
				7	2
	Figure	(1)	Figure (2)	Figure (3	)
		•	a mammal that i		hunt at nigh
2, F	igurere	presents	a rodent that live	in the	
90)	Science Prim 4 - First Teri	m			

	Figure represents a bird that has face
	All the previous animals are called animals because they have
	the ability to hunt during the In the In the
6	Arrange the following stops
	a ( ) Jerboa jumps on zigzag paths quickly
	b. () The brain translates the messages.
	c. ( ) On hearing danger, the sensory receptors sense t
	d ( ) The brain sends a response to the alert leg, of the jerboa
	e ( ) The sensory receptors in the ear send messages to the brain

#### Give reasons for:

- Nocturnal animals prefer to hunt at night.
- Although bats can't see in the dark, they can find food
- 3 An owl has a bowl-shaped face and feathers on its head
- The brain is the main control center of the body.
- 5 The nervous system is very important for living organisms
- 6 The jerboa has large ears.
- 7. The jerboa has long hind legs.
- 8 The feet and toes of a jerboa have hair.

#### What happens if:

- 1 The sound waves produced by a bat hit an insect's body?
- 2 The brain receives a message from the sensory receptors?
- 3 A girl touches the spines of a cactus plant?
- 4 A jerboa hears a snake moving nearby?

# Lesson 3

### 7 How the Nervous System Works

The nervous system is very busy; it has three jobs:

- It gathers information about what is happening inside or outside the body.
- It translates and processes the information.
- 1 tells the body what to do.
  - مع المعلومات عما يحدث داخل أو خارج الجسم.
    - إرسال استجابة مناسبة لما ينبغي أن يقوم به الجسم.

#### For example, the girl hears a chirping bird.

- 1) Sensory receptors in the ears receive the information.
- 2 Nerves carry the information to the brain.
- 3 The brain translates this information.
  - 4 The brain sends a message to the body about what to do.
  - 5 The girl turned to look for the bird on the tree.
    - 1 تقوم الحواس المستقبلة في الأذن باستقبال المعلومات. 2 ترسل الأعصاب تلك المعلومات إلى المخ.
    - 3 يترجِم العقل تلك المعلومات ويقوم بتفسيرها. 4 يرسل المخ رسالة إلى الجسم ليخبره ماذا ينبغي أن يقوم به

      - 5 تلتفت الفتاة للبحث عن الطائر على الشجرة.



- Some messages, called reflexes, are so fast you are barely aware of them, such as:
  - 1 Blinking when a strange object gets closer to your eyes.
  - 2 Moving your hand away when you touch a hot object.
- · Other messages are relayed to and from the brain automatically. like the signal to breathe.
  - · يعض الرسائل المعروفة بردود الفعل المعكسة تصل بسرعة كبيرة للعاية لا تتمكن من إدراكها مثل:
    - [] إغماض العينين عندما يأتي جسم قريب منها.
      - 2 تحریك بدك بعیدًا عند لمس جسم ساخن.
    - بعض الرسائل يتم نقلها للمح تلقائيًا ولا يمكننا التحكم بها مثل التنفس.

### Activity 8

# Describing the Nervous System

- , The parts of the nervous system work together to:
  - 1 Sense the environment.
  - 2 Interpret the information to decide the best action.
  - 3 Send a signal to the body to react

- تعمل أجزاء الجهاز العصبي معًا.
- · لإدراك البيئة وتقسير المعلومات للقيام بالفعل المناسب ومن ثم نقل الإشارات إلى الجسم للاستجابة.
- Without all of the parts of the nervous system, the person might not receive, send, or react to the information.
  - · لر يتمكن الشخص من استقبال المعلومات وإرسالها والاستجابة لها بدون وجود كل أجزاء الجهار العصدي.
- Look at the following images. Which of these is part of the nervous system? Circle all that apply.



Spinal cord



Brain



Nerves



Blood

Read the following sentences that describe the nervous system, then choose the suitable word from the brackets:

(Heart - nervous system - brain - Reflexes - nerves - blood)

- 11 The is like the command center for your body.
- 2 The send(s) messages to the brain.
- The brain is a part of the
- are messages sent by the nervous system that are often so fast that you don't think about them.

# Exercises on Lesson 3

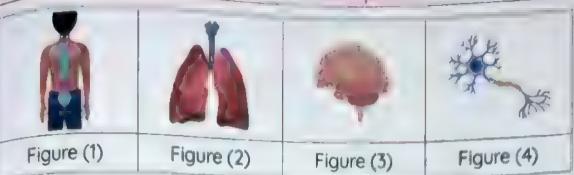
1		Choose the correct answer:	
	11	The components of the nervous s	ustem are connected to each ot
		by ************************************	ad
		a. the muscles	b. the nerves
		c. the tissues	d. the blood vessels
	2	The nervous system is responsible	for .
		a. gathering the information	b. translating the information
		c. telling the body what to do	d. all the previous answers
	3		
		a. brain - lungs	b. muscles - brain
		c. sensory organs - brain	d. muscles - sensory organs
	4	The brain is responsible for all the	following, except
		a. translating the information	b. sending signals to the muscle
		c. receiving signals from the sense	
		d. gathering the information	
	5	Which statement is wrong about "I	Nerves"?
		a. They connect the components	of the nervous system together.
		b. They are the main control center	er of the body.
		c. They carry messages from the	sensory organs to the brain.
	,	d. They are branches that extend	throughout the body.
	6	What is the correct sequence that	explains the following figure?
		a. Eyes nerves hand	The state of the s
		b. Hand> brain> nerves	
		<ul> <li>c. Eyes → nerves → brain →</li> <li>d. Hand → brain → eyes →</li> </ul>	
	7		·
	/	What is the correct sequence that	_
		a. Nose> nerves> brain	
		b. Hand> brain> eyes>	
		c. Nose → nerves → brain -	HUHU

d. Hand → nerves → brain → hand

Complete the following sentences from the words bet	wee	en
the brackets:	-	
The processes the sound waves coming from a radio		-> 1
(spinal cord -		
2. The identifies the sour taste of a lemon (to ugue=	110	4)
The . interprets information gathered by the sensory orgo		15
(brain - spina		(D)
When you smell a burning food, your sends a signal to t		
brain. (tongue -		
5 The sends an automatic signals to breathe.		3)
The sense of causes the jerboa to recognize a viper's no		
(sight – he	earin	ig)
7 Reflexes are responses transmitted by the nervous systematical responses to the response transmitted by the nervous systematical response transmitted by the nerv		
(slow	- ta	St)
Put (✓) or (X):		_
Put ( ) or ( x ):  1 The brain is responsible for translating information.	(	
	(	_ ) )
1 The brain is responsible for translating information.	( (	)
<ul><li>1 The brain is responsible for translating information.</li><li>2 All the components of the nervous system work together.</li></ul>		) ) ) ng
<ol> <li>The brain is responsible for translating information.</li> <li>All the components of the nervous system work together.</li> <li>Sensory receptors are responsible for breathing and digestion.</li> </ol>	ı lıvı	) ) ng )
<ol> <li>The brain is responsible for translating information.</li> <li>All the components of the nervous system work together.</li> <li>Sensory receptors are responsible for breathing and digestion.</li> <li>Nerves are branches that are found throughout the body of an experimental content of the properties.</li> </ol>	ı lıvı	
<ol> <li>The brain is responsible for translating information.</li> <li>All the components of the nervous system work together.</li> <li>Sensory receptors are responsible for breathing and digestion.</li> <li>Nerves are branches that are found throughout the body of organism.</li> </ol>	(	)
<ol> <li>The brain is responsible for translating information.</li> <li>All the components of the nervous system work together.</li> <li>Sensory receptors are responsible for breathing and digestion.</li> <li>Nerves are branches that are found throughout the body of organism.</li> <li>The brain sends signals to the body to tell it what to do.</li> </ol>	(	)
<ol> <li>The brain is responsible for translating information.</li> <li>All the components of the nervous system work together.</li> <li>Sensory receptors are responsible for breathing and digestion.</li> <li>Nerves are branches that are found throughout the body of organism.</li> <li>The brain sends signals to the body to tell it what to do.</li> <li>The brain can't deal with information transmitted by our ears and</li> </ol>	( ( ey	)
<ol> <li>The brain is responsible for translating information.</li> <li>All the components of the nervous system work together.</li> <li>Sensory receptors are responsible for breathing and digestion.</li> <li>Nerves are branches that are found throughout the body of organism.</li> <li>The brain sends signals to the body to tell it what to do.</li> <li>The brain can't deal with information transmitted by our ears an at the same time.</li> </ol>	( ( ey	)
<ol> <li>The brain is responsible for translating information.</li> <li>All the components of the nervous system work together.</li> <li>Sensory receptors are responsible for breathing and digestion.</li> <li>Nerves are branches that are found throughout the body of organism.</li> <li>The brain sends signals to the body to tell it what to do.</li> <li>The brain can't deal with information transmitted by our ears an at the same time.</li> <li>Some messages are transmitted automatically, like the signal to</li> </ol>	( ( d ey ( ·	) es )

	Living Systems		
(	Complete the foll the brackets:	owing sentences usi	ng the words between
	(skin - reflex -	run – nervous system - k	preathe - withdraw)
		ery hot object, you quic	and the second
1	determination of the design of		
	2 The sensory recept	ors in the sense t	he coldness of the weather.
	The is respond		
	The brain sends au	tomatic signals to	-ors d
(	Write the scientif	ic term:	
	1 They are nerves th	at receive information fr	om the environment.
		components of the nervo	
			ends the suitable response
	to the muscles.		
	4 The big nerve that	passes through the back	kbone.
	5 The time taken by	the body to respond to d	langer
	They're messages aware of them.	that are transmitted so	o fast that you are barely
	7 The organ that ca	n distinguish between sug	gar and salt.
	8 The sense that car	n distinguish between rou	igh and smooth surfaces.
	Cross out the od	ld word:	
(		Nerves - Spinal cord	
	2 Eyes - Nose - Tou	·	
	Tongue - Hearing		
	Compare between	en the following:	
	P. O. C.	Sensory Receptors	Brain
	Function		

# 8 study the following figures, then complete:



- Figure ( ) is not from the components of the respiratory system.
- Figure ( ) is the main control center of the living organism's body.
- Figure ( ... ) is located inside the backbone, and it's connected to the brain by nerves.
- Figure ( \_\_\_ ) is responsible for carrying the information through the body.

#### Arrange the following steps:

- a.(\_\_\_) The girl turns around to search for the bird.
- b.(\_\_\_) The girl's ears send this information to the brain.
- c.(\_\_\_) The brain sends a signal to the body.
- d.(\_\_\_) The girl's ears hear the sound of the bird.
- e.(\_\_\_) The brain processes this information.



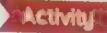
#### Give a reason for:

The nervous system has great functions.

#### What happens if:

A strange object gets closer to your eyes?

# Lesson 4



#### How Animals Use Communication Systems

Human communication has changed a lot, for example:

>>> People first started sharing information using written symbols.





>>> Technology systems allow us to call, text, and email messages over great distances.







Animals do not use technology systems as we do, but they can still use other systems to communicate, for example:

- Ants communicate together using their sense of smell.
- Humpback whales communicate by singing a wide range of tones.





- تغير التواصل بين البشر كثيرًا،
- بدأ البشر مشاركة المعلومات بالرموز المكتوبة.
- تتبح لنا أنظمة التواصل التكنولوجية إجراء الكالمات الهاتهية، وإرسال الرسائل النصية، ورسائل العريد الإلكتروني عبر مسافات بعيدة.
- لا تستخدم الحيوادات أنظمة التواصل التكنولوجية التي نستعملها كنشر، لكنها تطل فادرة على استخدام أبطمة تواصل أخرى
  - ه يستخدم النمل حاسة الشم للتواصل بينهم.
  - تغنى الحيتان الحدباء نغمات مختلفة للتواصل مع بعضها.



- . Ants live in colonies that contain thousands of individuals.
- . Ants use their sense of smell to communicate
  - بعيش النمل في مستعمرات بها ألاف الأفراد.
    - ه يستقدم النمل حاسة الشم للتواصل بينهم.





- Ants have developed systems that help them divide their work
- Solution of Groups of ants within a colony have different roles



**Nurse Ants** 

Nurse ants send strong smelly messages.



To alert scout ants that are responsible for locating food

**Scout Ants** 

They search for food and locate it.

**Soldier Ants** 

They use smells to communicate if there is danger nearby.

- و يتبع النمل داخل الستعمرة الواحدة أنظمة تساعدهم على تقسيم العمل فيما بينهم.
  - تؤدى مجموعات الذمل أدوارًا مختلفة داخل المستعمرة:
- [ عاملات اللمل تُطلق رائحة قوية كرسائل تنبيه للنمل الكشاف الملئول عن تجديد موقع الطعام.
  - 2 النمل الكشاف: يبحث عن الطعام، ثم يرشد عنه
  - [3] جنود النمل: تتواصل معًا بإطلاق الروائح في حالة وجود خطر قريب



# **Wales Communication**



- >> They sing a wide range of tones and a series of songs to communicate.
- >>> The songs of humpback whales have different sound pitches depending on the season



نفني الحيتان الحدياء بنغمات مختلفة وسلسلة من الأغاني للتواصل مع بعضها تحت المياه. تختلف حدة الصوت في الأغاني التي تصدرها الحيتان الحدياء حسب الفصول المناخية.

#### n Winter

 Humpback whales sing in winter that is the mating season.

> تغنى الحيتان الحدياء في فصل الشتاء وهو موسم التزاوج.

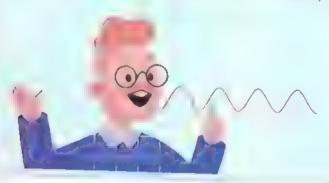
ALLES T

· Humpback whales sing in summer that is the feeding season.

> . تغنى الحيتان الحدباء في فصل الصيف وهو موسم التغذية،



- A man has a rough voice. (Low-pitched sounds)
- A woman has a starp voice. (High-pitched sounds)







Ell.

# in Action 10 Technology Inspired by Nature

#### Bats:

- Many animals, such as bats, use sound to communicate with each other.
- » Bats also use sound to get information about their surroundings, as follows:
- TA bat produces a high-pitched sound.
- 7 The sound hits the object (an insect) and reflects back.
- 3 The bat listens for an echo (reflected sound).
- 4 The bat locates the object nearby.
  - أيصدر الخفاش صوتًا له درجة عالية.
    2 عندما يصطدم الصوت بحشرة فإنه يرتد مرة أخرى.

    - 3 يسمع الخفاش الصدى أو الصوت المرتد. 4 بحدد الخفاش موقع الحشرة القريبة منه.



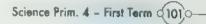
» Scientists created a cane that emits a high-pitched sound to help blind people detect their surroundings.

• ابتكر العلماء عكازًا يُصدر صوتًا عالى التردد؛ لمساعدة الشخص الكفيف لتحديد موقع الأشياء المحيطة به.

#### How does a blind person use the cane?

- 1 As the blind person walks, this special cane picks up the echo of high-pitched sounds.
- 2 Echo is turned into vibrations that the person can feel using his thumb.
- 3 These vibrations tell the blind person about nearby bodies.
  - عبد تحرك الشخص الكفيف يلتقط العكاز صدي الصوت عالي التردد،
    - 2 يتحول صدى الصوت المتزازات يشعر بها الشخص بإبهامه.
      - 3, تدل تلك الامتزازات الشخص بالأجسام من حوله.

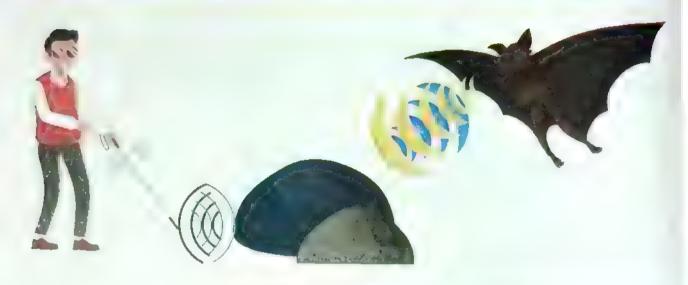






- 1 Bats use their ears to "see" in the dark.GR Because bats use their ears for echolocation that enables them to get information about their surroundings.
- 2 A special cane helps a blind person to walk alone. Because the cane picks up the echo and turns it into vibrations that tell the blind person about nearby bodies.

### Similarities and Differences between Bats and Canes



	Bats	Canes	
Differences	<ul> <li>Bats can't change echo into vibrations.</li> <li>Bats use their strong hearing sense to pick up the echo.</li> </ul>	<ul> <li>Canes change echo into vibrations.</li> <li>A blind person uses his sense of touch to pick up the echo.</li> </ul>	
Similarities	<ul> <li>They depend on echo to locate things.</li> <li>They produce high-pitched sounds.</li> </ul>		

# Exercises on Lesson 4

#### Choose the correct answer: Ants communicate together using a. sound patterns b. light patterns c. motion patterns d, their sense of smell Nurse ants send a smelly message to scout ants in case of a. Mating season b. A danger nearby c. Lack of food d. Lack of water are responsible for searching for the food resources a. Nurse ants b. Scout ants c. Solider ants d. Scavengers ants Solider ants send a smelly message to other ants in case of a b. nearby danger a. mating season c. lack of food d. lack of water use a technological system to communicate a. Humans b. Ants d. Humpback whales c. Bats 6 Animals can communicate with each other by a. producing sounds b. talking d. sending emails c. writing symbols Humpback whales sing different tones for all the following purposes, except ..... b. feeding a. mating d. communication c. heating 8 Humpback whales sing during months, which is the mating season. b. summer a. winter . d. autumn c. spring 9 All the following have a super sense of hearing, except a. humpback whales b. bats d. dolphins c.humans

_ o l	Living Systems			
10	. Is a prop	erty used by dolp	hins and bats to	locate their prey.
	a. Countershadi	ing	b. Camouflage	
	c. Echolocation		d. Panting	
11	Bats and canes	of blind people pr	oduce -pi	tched sounds.
		b. low		A & t - 1-
12	All of the follows	ng use the echolog	cation property to	o locate things,
	except			
	a. blind people's	canes	<b>b</b> . bats	
	c. owls		d. dolphins	
13	can char	nge echo into vibro	ations.	
	a. Bats		b. A blind perso	n's cane
	c. Dolphins		<b>d.</b> Jerboas	
14	Bats use their str	ong sense of	to detect ech	10.
	a. sight	<b>b.</b> smell	c. hearing	d. touch
15	Blind people use	their sense of	to pick up ech	o through the can
	a. hearing	b. sight	c. smell	d. touch
16	Both bats and sp	pecial canes	ememas &	
				echo to vibration
	c. produce high-	pitched sounds		
	d. detect echo us	sing their hearing	sense	
		ollowing sente	nces from the	words betwee
	he brackets:			
1 /	Ants depend on t	heir sense of	to communic	cate. (smell - sigh
2 1	Nurse ants send	a smelly message	e in case of a .	of food.
				(plenty - shortage
(3, F	Humpback whale	es communicate b	by their sense of	* * * * * * * * * * * * * * * * * * * *
				(hearing - sight
4, \	women's voices	are in pitc	h than these of n	_
				(lower - higher

1040 Science Prim. 4 - First Term

5	Sounds produced by humpback whales in the mating season are	<u> </u>	
ľ	in pitch than those produced in the feeding season		
	(different - Sir	milar	)
X	In a blind person's cane, the echo is turned into		
	(flashlight - vibra	tions	()
7	The pitch produced by a blind person's cane is too to be		
	heard by their ears. (high	- low	()
В	The a blind person can feel the vibrations picked up by his cane		
Ĭ	through his (ears - th		
9	When the sound bounces off a solid object, a/an is proc		
	(shadow -	echo	0)
7	Put (/) or (X):		-
1	Ants can detect the sweetness of food by their sense of smell.	(	7
2	Groups of ants have the same role in the same colony.	(	)
3	Scout ants are responsible for alarming the colony in danger.	(	)
4	Solider ants protect the hive from any danger nearby.	(	)
5	Humpback whales change their sound pitch according to the seaso	n. (	)
6	Humpback whales can sing underwater.	(	)
7	Humpback whales communicate with each other through flashing.	(	)
8	Men have a high-pitched and rough sound.	(	)
	The special cane emits a low-pitched sound.	(	)
	The special cane can help a deaf person locate things.	(	)
	Without their strong sense of hearing, bats will die	(	)
1	Complete the following sentences using the words be	twe	en
7	the brackets:		
	(sight - Humpback whales - Bats - light - sound - smell -		
	blind person's cane)		
1	A . is a technology inspired by the adaptation in bats.		
, .2	can't convert echo into vibrations.		

#### Living Systems

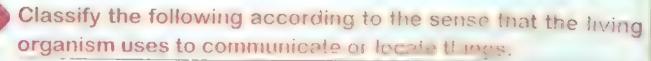
- 3 A blind person isn't be able to use his sense of .
- 4 Echolocation depends on \_\_\_\_\_ energy.
- 5 change their songs' sound pitch according to the seasons.
- 6 Ants depend on their sense of to communicate.

#### Write the scientific term:

- 1 A place where groups of ants perform different roles.
- 2 It's the sense that helps ants communicate together.
- 3 It's the sense used by a blind person to detect echo in his cane.
- 4 It's the sense used by bats to detect echo.
- 5 Ants that send a smelly message to alert the scout ants to search for food
- 6 Ants that are responsible for finding the food resources outside the colony.
- 7 Ants that send smelly messages in case of side a danger nearby.
- 8 Living organisms sing a wide range of tones underwater to communicate.
- 9 A property that is used by dolphins and bats to locate their prey in the dark.
- 10 A special device that is used by a blind person to locate things nearby.

#### Cross out the odd word:

- 1 Texting Sending an email Echolocation Writing
- 2 Acacia trees Kapok trees Ants Bats
- 3 Humpback whales Mongooses Ants Dolphins
- 4 Man Woman Sharp voice High-pitched sound
- 5 Bats Blind people cane Humpback whales Owls
- 6 Bats Humpback whales Dolphins Ants



Humpback whales - Ants - Bats - A blind person's cane

**Hearing sense** 

Smell sense

Touch sense



#### Study the following figures, then complete: Figure (4) Figure (2) Figure (1) Figure (3) 1 Figure ( ) can use technological systems to communicate. 2 Figure ( ) uses his/her touch sense to detect echo. 3 Figure ( ) uses its hearing sense to detect echo. Figure ( ) uses its smell sense to communicate. ) can attract mates by singing underwater. 5 Figure ( ) represents a technological tool inspired from nature. Figure ( Study the following figure, then put ( $\checkmark$ ) or ( $\checkmark$ ): Nurse Ant Scout Ant Soldier Ants 1 Ant number (2) has different role than ants number (3). 2 Ants number (3) work together to protect the colony from any danger.

3 Ant number (2) alert ant number (1) if the food is low.

Ants have developed systems that help them divide their work.

00

18

#### Living Systems



#### Give reasons for:

- 1 Nurse ants send a smelly message to alert scout ants.
- 2 Scout ants have a great role in the ant world.
- 3 Sometimes solider ants send smells to other ants.
- 4 Bats use their ears to "see" in the dark.
- 5 A special cane helps a blind person to walk alone.
- 6 There are some similarities between bats and the special canes used by blind people.

#### What happens if:

- 1) The amount of food in the colony is low.
- 2. A danger threatens the colony.
- 3 Bats have a weak sense of hearing.
- 4 The cane of a blind person picks up an echo



# Light and Sight

#### Comment of the Total

By the end of this concept, students will learn about:

- Examples of nocturnal animals.
- ▶ Special structure of the eyes of nocturnal animals.
- ▶ Sources of light.
- ▶ Light reflection.
- Types of objects around us.
- ▶ How vision occurs.

#### es Vocalitilate)

Feature

Pupil

Light

Reflect

Transparent

Opaque

# Concept 3

### Light and Sight

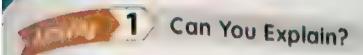
#### Lesson 1

- Activity 1 Can you explain?
- Activity 2 Hunting with Night Vision
- Activity 3 What Do You Already Know About Light and Sight?
- Activity 4 Light Reflection
- Activity 5 Light Strikes Matter
- Activity 6 Firefly Light Show
- Activity 7 What Do You Already Know About Communication and Information Transfer?

Leont

- Activity 8 Transferring Information
- Activity 9 Review: Communication and Information Transfer

## Lesson 1



### Tick (/) the correct answer.

- 1. Humans need
- to see what is happening around them
- sound
- heat
- light

The

is the organ that is affected by light in the human body.

, ear

- eye
- ) nose
- n low-light a eas humans can't see clearly and need more light.
- park areas, humans can't see anything and depend on other senses.
  - في الأماكن منخفضة الإضاءة لا يستطيع الإنسان الرؤية بشكل جيد، ويحتاج للمزيد من الضوء.
    - في الأماكن المظلمة لا يستطيع الإنسان الرؤية تمامًا، ويمكنه استخدام الحواس الأخرى،
  - Humans need a subject to see clearly.
  - The eye senses the light, and the man tells you what you are seeing.
    - يحتاج الإنسان لمصدر ضوء ليرى بشكل جيد.
      - تشعر العين بالضوء ويخبرك المخ بما تراه.



- Some animals can see better than humans in the dark, such as the fishing cat.
  - بعض الحيوانات تستطيع أن ترى أفضل من الإنسان في الظلام مثل القط السماك.





#### **Hunting with Night Vision**

#### **Night Vision in Humans**



>>> Human eyes need a source of light to see objects clearly.

جمتاج أعين الإنسان للضوء لرؤية الأشياء موضوح.



>> Without light, humans would need night vision goggles to see in the dark.

و بدون الضوء قد يحتاج الإنسان لنظارات خاصة بالرؤية الليلية ليرى في الظلام.

>> Fishing cats have a structural adaptation that allows them to have excellent night vision to hunt successfully in the dark.

#### **Fishing Cat** القط السماك

- It is a wild cat that hunts for food at night.
- · Its eyes seem to glow in the dark.



- Because it has a mirror-like membrane on the back of its eye, that reflects light entering the eye and allows it to collect more available light.

- ه مو قط بري يصطاد في الليل.
- ، تتوهج (تلمع) عيون القط السماك في الظلام.
- وذلك لأنه يملك غشاءً رقيقًا كالمرآة في مؤخرة العين تعمل على ارتداد الضوء من الغشاء

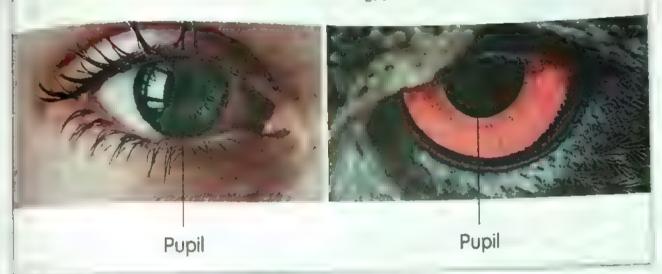
ليسمح للمين بتجميع أكبر قدر ممكن من الضوء.



Nocturnal animals can see better than humans in the dim light و Nocturnal animals can see better than humans in the dim light

- Nocturnal animals have bigger eyes than humans
- , The pupils of the eyes of nocturnal animals open wider than the pupils of human eyes. GR
  - \_ To allow more light to enter their eyes to see well at night.
    - · أعين الحيوانات الليلية أكبر من عين الإنسان.
    - حدقة العين للحيوانات الليلية أكثر اتساعًا من الإنسان

لتسمح بمرور أكبر قدر من الضوء لأعينها؛ مما يتبح لها رؤية جيدة خلال الليل.



#### **Nocturnal Animals**

- In the weakest light levels (dim light), they can see their surroundings well.
- >> In complete darkness, they depend on other senses, such as hearing, smell, and touch.
  - تستطيع الحيوانات الليلية رؤية البيئة من حولها بأقل مستوى ضوء ممكن.
  - ه تعتمد الحيوانات الليلية في الظلام على بعض الحواس الأخرى كالسمع والشم واللمس.

### 3 What Do You Already Know About Light and Sight

Source of Light

It's something that emits (gives off) its own light

مصدر الضوء: الشيء الذي ينبعث منه ضوءه الخاص.

The Sun

**Electric Lamp** 

Fire

Flashlight

Candle











· The moon, is like mirrors, is not considered a source of light.



- Because the moon doesn't emit its own light, but it reflects the sunlight falling on it.

. القمر كالرآة ليس مصدرًا من مصادر الضوء؛ لأنه لا ينبعث منه ضوءه الخاص، ولكنه يعكس الضوء الساقط عليه.

#### How can we see things?

- Light falls on the object.
- 2 Light is reflected on our eyes.
- 3 Structures in human eyes transmit messages to the brain that form a picture about what we see.



وسقط الضوء على الأجسام وينعكس إلى أعيننا.

· تنقل التراكيب الموجودة في عيون الإنسان رسائل إلى المخ لنستطيع تميير ما نراه.

>> Light is a visible form of energy that travels in the form of waves.

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## Exercises on Lesson 1

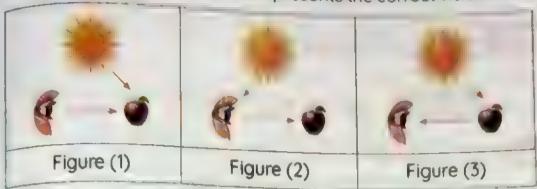
	choose the corre	ct answer:		
	The eyes of		n the dark	
	a. humans	b. cats	c. bats	d. snakes
6	Each of the followin	g is considered	a source of light,	except
•	a. the fire	b. the Sun	c. the lamp	d. the eye
9	The mirror-like men	nbrane at the b	ack of a cat's eye	es the light
•	falling on it.	6 1 2 21		
	a. refracts	b. absorbs	c. reflects	d. scatters
1	The human eye is a			y
5	a. sound	b. heat	G IIGIN	d. taste
3	Humans can use	to be able	e to see in comple	ete darkness.
	a. special glasses		b. night vision go	oggles
	c. magnifying lens		d. binocular	
8	Which is the correct	t sequence that	t represents the vi	sion?
450	a. Object eye		b. Eye → obje	ect light
	c. Light eye	→ object	d. Light obj	ject — eye
Ĵ	The moon appears	bright and shir	ny because	
	a. It emits its own li	ght	b. it refracts the	light of the Sun
	c. it reflects the ligh			source of light
Î	Which of the follow	ing is a source	of light?	h h Allianner
	a. Eye	b. The moon	c. Fire	d. Mirror
9	The pupils of noctu	rnal animals of	pen the pu	upils of humans.
	a. wider than ;		b. similar to	
	ć. narrower than		d. smaller than	Last antors the
ĴQ	The inside	the eye control	s the amount of I	ight that enters the
	eye.			
	a. cornea	b. lens	c. membrane	
Ü	In complete darkno	ess, many noct	urnal animals car	ir cence
	environment by all	the following s	enses, except the	d. smell
	a. hearing	b. touch	c. sight	G. SITIEII

	ving Systems	
	The system has an important role in vision.  a. respiratory b. nervous c. digestive d. circulatory energy is a visible form of energy that our eyes can detect.  a. Heat b. Sound c. Light d. Electrical The can reflect the light that falls on it/them.  a. mirror b. moon c. flashlight d. a and b	
	complete the following sentences from the words between the brackets:	n
	The eyes of fishing cats are considered a adaptation.	-
	(structural - behavior Humans can use to see at complete darkness.  (night vision goggles - binocula	
	Humans and cats have abilities to see at night.	(5)
	(similar - d ffere	
	ogotern helps numans detect objects in a luminous roor	
	(nervous - respirato waves affect our eyes causing vision.  (Sound - Lig appears bright as it reflects the sunlight falling on it.	int,
	(moon – electric langement)  The pupils of nocturnal animals' eyes open widely for light to light to (more – le	0
,	than humans at night.	ĺ
	can see a moving animal clearly. (humans can see less clearly in the distance of light. (reflection - refraction of light.)  (better weak continued to the presence of light. (humans can see less clearly in the light.)  (better weak continued to the presence of light. (humans can see less clearly in the light.)  (can see a moving animal clearly. (humans can see less clearly vision due to the presence of light. (a mirror-like membrane - pup light.)  (dark - dim light)  (reflection - refraction light)	its)
	oth humans and animals need a source of light to see.	
	The moon is a source of light	)
	ome animals can see in the dark, such as wild cats.	)
	he eye is the organ that is affected by the light in the human body	
	(	)
-9	cience Prim 4 - First Term	

Light and Sig	ght
The human eye can see objects because it emits its own light  A fishing cat has a mirror-like membrane in front of the eye  Humans need night vision goggles to see objects in the darkness ( Hunting at night for nocturnal animals is considered a behavioral adaptation.  Nocturnal animals have eyes that are larger than humans' eyes  The pupils in the human eyes open narrower than these of cats  In a cat's eyes, the pupils open widely to allow less light to enter the eyes.  The nervous system is very important for seeing and hearing  It is much easier for humans to see objects in dim light than in full light.	e ( )
Complete the following sentences using the words between the brackets:	een
(mirror - brain - moon - sound - humans - light - Cats - eyes)  have an excellent night vision, but have a poor night vision have a poor	ohins lings.
Write the scientific term:	
<ol> <li>They're animals that are adapted to be active at night.</li> <li>Wild cats whose eyes look shiny at night.</li> <li>The visible form of energy that is necessary for vision.</li> <li>The object that emits its own light.</li> <li>A special tool that humans use to see objects in complete darkness.</li> </ol>	ess.
Cross out the odd word:	
Fishing cat - Bat - Owl - Panther chameleon  Candle - Flashlight - Moon - Electric lamp	

### study the following figures, then answer the questions below:

Which of these following figures represents the correct vision in humans?



- The following figures represent two shiny objects appearing in the sky at day or at night. Study these figures, then complete the following sentences:
  - Figure (\_\_\_\_\_) is not a source of light, but it reflects the light of figure (\_\_\_\_\_) that falls on it.
  - Figure ( ...... ) is the natural source of light.



#### Give reasons for:

- f Unlike humans, some nocturnal animals can see at night.
- A fishing cat's eyes seem to glow in the dark.
- Although the moon is shiny, it isn't a source of light.
- The pupils of the nocturnal animals' eyes open wider than humans eyes.

#### What happens if:

- The fishing cat doesn't have a mirror-like membrane in its eyes?
- Light falls on objects around us?
- Humans' eyes have a mirror-like membrane, like fishing cats?

## Lesson 2



### Activity 4 Light Reflection

Activity To Show Light Reflection

#### Steps:

Direct the light of a flashlight on the following objects:



#### Obumputers.

- Sn.ny (smooth) materials, such as mirrors and metals, reflect most of the light rays that fall on them.
- >>> Rough materials, such as wood, clothes, and papers, reflect small amount of the light rays that fall on them.

#### **Conclusion**

- >> Shiny (smooth) materials reflect light better than rough materials.
- >> Light reflection is the bouncing of light rays when they fall on a reflecting surface.



#### **Light Strikes Matter**

#### Interaction of Light with Matter

الله Light is a form of energy that travels in a straight line in the form of waves.

#### When light falls on an object

Some light may be absorbed

يمتص الجسم بعض الضوء



Some light may pass

يمربعض الضوء عبر الجسم



Some light may be reflected

يعكس الحسم يعض الضوء



#### Materials are classified into:

#### Tresupparent Herenan

#### الأجسام الشفافة

- They are the materials that a icw light to pass through.
- Things can be seen behind them.
- They don't have shadows.

#### Desgu Metera

#### الأجسام المعتمة

- They are the materials that don't allow light to pass through.
- Things can't be seen behind them.
- They have shadows.

#### Examples

· Air - Water - Window - Lenses





Human body - Wood - Metal





### Give a reason for...





Shadow is formed when light falls on an opaque object.

Because light is absorbed or reflected and can't pass through it.





Why does the light reflection depend on the smoothness of the surface



Smooth Surface such as a mirror



Rough Surface such as a painted surface



#### What happens if...?

- Ligh falls on a smooth surface
  - Light rays are reflected in the same direction.
    - عندما يسقط الضوء على سطح ناعم، فإن أشعة الضوء تتعكس في نفس الاتجاه،
- >> Light fails on the following the
  - Light rays are scattered (diffused) in directions.
  - عندما يسقط الضوء عن سطح حشر، فإن أشعة الضوء تتشتن في اتجاهات مختلفة.

#### Check your understanding?



>> Your elder sister dropped her cell phone, and now the screen has a few cracks. How do you predict that light will be reflected from the screen?

## Exercises on Lesson 2

-	choose the co	orrect answer:		~
V	what features of	of light helps you s	ee yourself in the mi	uot,
	a. Refraction	b. Shadow	c. Rainbow	d. Reflection
21/	Light travels in .	MARKET THE STATE OF THE STATE O		
	a. curved	b. straight	c. zigzag	d. opposite
3		ht requires	. 1	
	a. a flashlight	<b>b</b> . a radio	c. a mirror	d.a and c
ין (	is/are	an example of a lig	ht-reflecting materia	
	a. Wood	<b>b.</b> Mirrors	c. Plastic	d. Papers
ĺ	The moon appo	ears shiny in the sk	ky at night because	
	a. it emits its ov	wn light		to pass through it
	c. it absorbs su	inlight that falls on	it d. it reflects sunligi	nt that rais on it
34	Mirrors make th	ne falling light rays		at directions
	a. pass through		b. reflect in differe	nt directions
	c. reflect in the		•	
		hose of rough surf		
9 7	-	sidered transpare	c. Mirrors	d. Papers
	a. Metals	b. Lenses		Oil Op 5: 5
		g are transparent r	c. wood	d. lenses
	a. glass	b. air	does not form a sh	
		ollowing materials	does not form a on	
	falls on it?  a. Wood	<b>b.</b> Glass	c. Carton	d. Tree
1	In All the following	I I I I I I I I I I I I I I I I I I I		
1	All the following	g materials are op-	b. the human bod	y
	a. wood	g materials are op-	b. the human bod d. iron	y
	a. wood c. water		b. the human bod	y

#### Living Systems

- 12 When light falls on a dark surface,
  - a. the surface absorbs the light b. the light passes through it
  - c. the light is refracted
- d. nothing happens
- 13 All the following are considered rough surfaces, except
  - a. wood
- b. clothes
- c. mirror
- d. paper
- All the following reflect the light rays that fall on them, except the
  - a. moon
- b. mirror
- c. flashlight d. metal
- 15 A reflects most of the light rays that fall on it.
- a. plastic spoon

b. metallic spoon

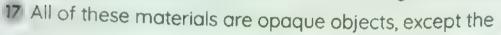
c. wooden spoon

- d. piece of rock
- 16 A piece of clothes is considered a
  - a source of light

b. transparent medium

c. smooth surface

d. rough surface



- a. wood
- b. lenses
- c. human body d. metals
- 18 You can see your friend clearly if he stands behind a

  - a. glass window b. shiny mirror c. wooden door d. metallic door
- 19 The object in figure . . . is considered a transparent medium.

a.





- surfaces scatter and diffuse light rays.
  - a. Shinu
- b. Smooth . c. Rough
- d. Polished

#### enter the words between the brackets:

1 When sunlight falls on an opaque object, a . is formed.

(rainbow - shadow) 2 Light can pass through

(a brick - glass)

3 You can see a ball found inside a box

(11.01er - glass)

is a transparent liquid material.

, NUT : - 111

		Light and S	Sigl	nt
		When light rays fall on a , they are scattered in many directions.  A polished mirror reflects of the light rays falling on it.		
عا	8 9 10	Alr and water are materials. (transparent - open is one of the opaque objects  When light falls on a piece of wood, a amount of light is reflected.  A rough surface the light rays falling on it. (scripter: 100 smooth surfaces reflect light in direction(s).	arg	e) e)
	13	(the same - different the mirror-like membrane in the cat's eyes is considered a surface.  A shadow is formed when light falls on (glass - a)  Put (/) or (X):	oot	h)
E	7			
سا		Light reflection depends on the smoothness of the object's surface.	(	)
	2	Shiny objects include mirrors, metals, and wood.	(	)
	3	The moon is considered a reflecting surface, such as a mirror.	(	)
Ĺ	4	Wood is a transparent object that allows light to pass through it.	(	)
Ĺ	5	The wooden board reflects less light than the mirror.	(	)
	Œ	The opaque materials do not let the light pass through.	(	)
		A painted surface reflects light in one direction.	(	)
-		Shadows are formed when light hits a transparent object.	(	) '
		A sheet of glass allows light rays to pass through it.	(	)
L	10	If I can see my face clearly on a surface, this means that it is a sm	001	th,
	20	shiny surface.	(	)
		The human body forms a shadow when light falls on it	(	)
	12	Air and water are considered transparent materials.	(	)
	13	right ways traval in the air in the form of curved lines	1	1

Opaque objects absorb some of the light falling on them and reflect

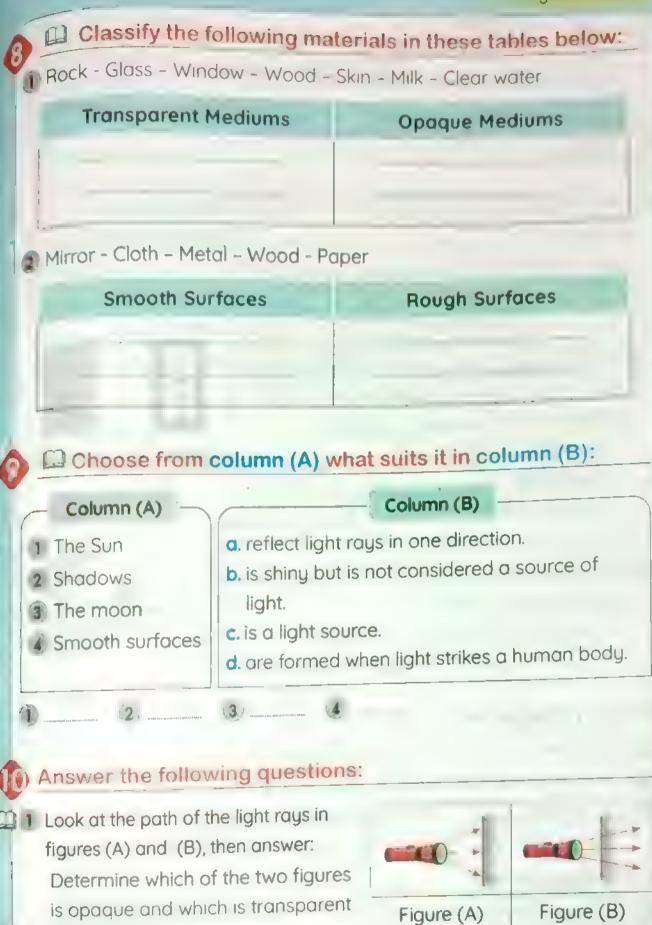
the rest of the rays.

	Living Systems
d	Complete the following sentences using the words between
	the brackets:
)	(opaque - more - less - shadow - mirror - transparent)
	1 Most of the light is reflected in one direction when it falls on a
۱	2 A mirror reflects light than a piece of wood.
1	3 Glass is a/an object, but the human body is a/an object
	When putting an opaque object between a flashlight and a wall,
	a is formed.
4	Write the scientific term:
	1 The bouncing of light rays when they fall on a reflecting surface.
	The materials that allow most light to pass through.
	Materials that don't allow light to pass through.
	They are surfaces that reflect the light rays in one direction.
L	A type of surface that reflects light in different directions.
	6 A dark area that is formed when light falls on an opaque object.
	Cross out the odd word:
	Clothes - Paper - Mirror - Wood
•	2 Air - Human body - Water - Glass
	3 Lenses - Wood - Skin - Paper

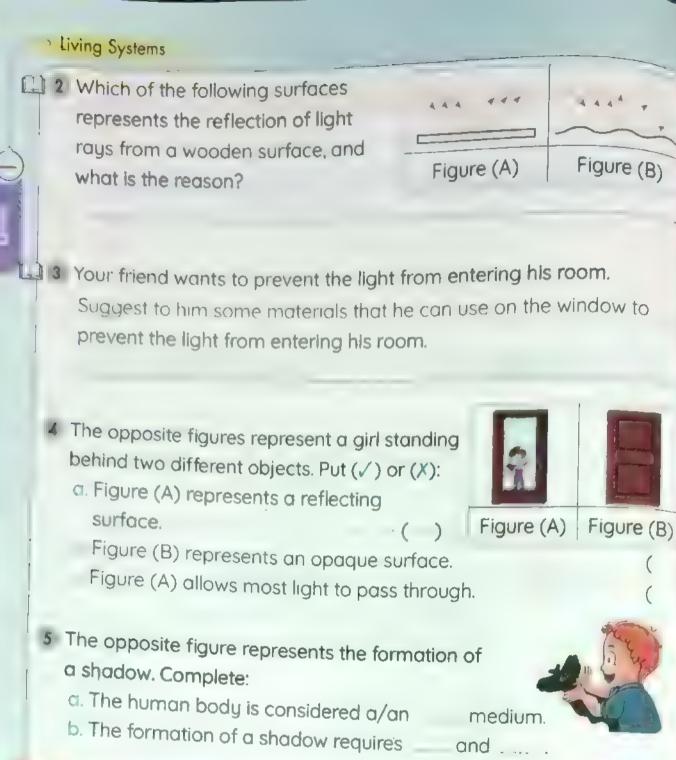
### Classify the following materials into transparent and opaque materials:

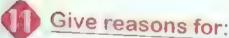
1 A wooden chair	
2. An aluminum pot	
(3) Air	

4 Glasses of glass



b. Figure (B) is ...





- 1 Air is considered a transparent medium.
- 2 The human body forms a shadow when light falls on it.
- 3 You can see your image in a mirror, but you can't see it on a paper.

#### What happens if:

- 1) Light rays fall on a mirror?
- Light rays fall on opaque object?





#### Firefly Light Show

#### **Fireflies Communication**





Habitat: They live on mangroves in Thailand.

- Fireflies are not flies. They are actually winged beetles
- Fireflies produce a chemical reaction inside their bodies that allows them to light up.

Fireflies use their wings to flash at regular periods of time (intervals) to



warn off predators.



attract a mate.

- يحدث تفاعل كيميائي داخل أجسام الخنافس مما يجعلها تضيء.
- تُستخدم الخنافس الأجنحة لإطلاق ومضات ضوء على فترات منتظمة من أجل:
- التحذير من قدوم حيوانات مفترسة.
   چذب الجنس الآخر من أجل التكاثر.

#### What happens if...



- There is another group of fireflies flashing nearby?
  - 1 Fireflies will stop flashing their own patterns.
  - 2 They will start to match the pattern of the other group.

ماذا سيحدث لو: كانت هذاك مجموعة خنافس مضيئة أخرى بالقرب منها؟

سنتوقف عن النمط الذي تومض به، ثم تقلد نمط المجموعة الأخرى للتواصل معها.

HARDEN LOT ON BUT IS SERVINGED IN THE RE



Traffic lights



Lighthouses are used to guide ships.

#### Activity 7

### 7 What Do You Already Know About Communication and Information Transfer?

There are some similarities and differences between humans and animals in communication and transferring information.





- Writing
- Reading
- Language
- TV Cell phones
- An electronic reader



- Displaying light
- High-pitched sound

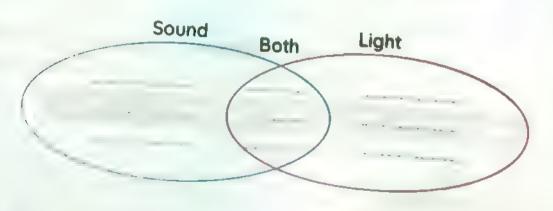


• Echolocation



>>> Use the following living organisms to fill the gaps:

Human - Humpback whale - Firefly - Monogoose

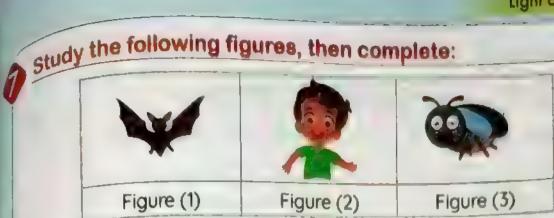


300 Science Prim. 4 - First Term

## Exercises on Lesson 3

#### Choose the correct answer: Reading and writing are common types of communication in a. animals b. plants d. birds c. humans Animals can communicate with each other through . a. sound and lightic b. traffic lights c. reading d. writing 3 Fireflies could be found in the same habitat of the d. mangrove tree a. palm tree b. cactus c. acacia tree A firefly is not a bird, but it is a type of d. reptiles a. amphibians b. lizards c. beetles Changing the pattern of light in a firefly is an example of adaptation(s). b. physical and behavioral a. structural and behavioral d. behavioral, ... c. structural produce a chemical reaction inside their bodies. b. Firefly beetles c. Houseflies d. Owls a. Butterflies 7 Fireflies light up their wings for all the following reasons, except b. communicating together a. warning off predators d. attracting a mate c. attacking predators Complete the following sentences from the words between the brackets: 1 Fireflies light up due to a \_\_\_ reaction in their bodies. (physical - chemical) (winged - wingless) 2 Fireflies are beetles. adaptation. 3 The ability of fireflies to light up is a . (structural - behavioral)

	Living Systems	
	Changing the fla	sh pattern in fireflies is a adaptation.  (structural - behaviore)
	5 Fireflies depend	
Unit	The(tail -	wings) of fireflies light(s) up to attract a (predator - mate
	Put (/) or (x):	
2	Both humans and Fireflies light up the	municate with each other using sound energy. ( I animals use light and sound to communicate. ( neir wings to warm their bodies. ( ies flash due to a biological reaction inside their
1	Write the scient	ific term:
	_	es that light up their wings.
	2 It's a living organis	im that communicates by cell phones.
5	Cross out the od	
1	Bats - Fireflies - D	olphins - Humpback whales
	2 Humans - Reading	g – Writing – Animals - Speaking
	3 Traffic lights - Rea	ding - Lighthouses - Echolocation
6	Choose from cole	umn (A) what suits it in column (B):
	Column (A)	Column (B)
	1 Humans	d. hunt mosquitoes by using echo.
	2. Bats	b. light up their wings to attract a mate.
	3 Dolphins	c. can communicate by writing and reading.
	Fireflies	d. detect the sound reflected from fish.
	2 Science Prim 4 - First Term	3 4



- Figures ( \_\_) and ( \_\_) communicate by light.
- Figures (....) and (...) communicate by sound.
- Figure (....) has a strong sense of hearing.
- Figure ( \_\_\_) can communicate by cell phone.
- Figure (\_\_\_) lights up its wings to attract a mate.
- Figure (\_\_\_) has poor night vision but can still hunt at night.

#### Give reasons for:

Fireflies light up their wings.

The ability to communicate using writing separates humans from animals.

#### What happens if:

There's another group of fireflies flashing nearby?

## Lesson 4



#### Retiring 8 Transferring Information

- >>> We use our senses of sight, touch, taste, hearing, and smell to:
  - Collect information about the environment around us.
  - 2 Communicate or share information with others.
- >> Your ears detect sound energy. Your eyes detect light energy,

#### Examples of information that the eyes receive

You see your friend waving.



رؤية صديق يلوح لك بيده.

A car stops when seeing a red traffic light.



ته قف السيارة عند رؤية إشارة المرور حمراء.

Using a rescue fiare to get help.



استدرام شعلة إثقاد لطلب الساعدة.

Hikers use mirrors to attract rescue helicopters.



استخدام الرحالة المرايا لجنب طائرات الهليكوبتر لإتقاذهم.



• In the past, humans used signal fires to communicate from a distance.

اعتاد الناس قديمًا إشعال النار واستخدامها للتواصل على مسافات طويلة

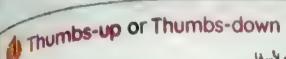
Humans use codes to transmit information.

ه يستخدم الإنسان الشفرات في نقل المعلومات.

Code

It is a pattern that has a meaning.

الشفرة: هي نمط له معني،



ء رفع الإبهام لأعلى أو خفضه لأسقل.



### 2 Facial expressions:

They help people know what we feel.

ه تعبيرات الوجه تساعد الناس على معرفة ما نشعر به.



Language: It is a code in the form of sound.

Different languages have different codes,

but they transmit information;

، اللغة هي وسيلة للتواصل في شكل طاقة صوتية.

و اللغات المُختلفة لها شفراتٍ مُختلفة، ولكنها تنقل المعلومات.



Writing: It is a code in the form of symbols or arranged letters giving a specific meaning.

الكتابة هي طريقة للتواصل في شكل رموز أو حروف تُعطى معنى معينًا.



#### Music or sounds:

They are used to encode messages.

ه يمكن استخدام الموسيقي أو الطبول في إرسال الرسائل.



6 Lighthouses: They encode information in flashes to tell sailors where they are.

تقوم المنارات بإرسال رسائل (ومضات ضوئية) للبخارة في السفن.



- Sense organs receive information and send it to the brain.
- The brain decodes and interprets the meaning.
  - تستقبل أعضاء الحس لديك هذه العلومات وترسلها إلى المخ.
    - ويفك المخ تلك الشفرات ويفسر معناها.



>>> Classify the following communication types into (animals, hurricity) or both):

Communication Type	Humans	Animals	Both
1 Displaying light			1
2 Writing			
3 Echolocation			
Using a cell phone			
Using high-pitched sounds			
6 Using echolocation			
Language (Speech)			
Traffic lights			
Send special scents			
<b>©</b> Lighthouses			
Using sounds			
12 Reading			
13 Producing chatters			
Thumb-up or down			

# Exercises on Lesson 4

Choose the correct answer	er:
All of the following are consider	ered code forms, except
a. facial expressions	<b>b</b> .language
Daina	d.writing
c. stop 5	ation received by the eyes, except
a, for someone waving	b. the rea traffic light
i:ahthouses	d.speaking
. the following depend on sor	und energy to communicate, except
a. fire alarms	<b>b.</b> fire signals
c. languages	d. musical instruments
c. languages	ering it down is a kind of
	<b>b</b> .codes
a.colors -	d. lights
c.waves	decoding the codes received from sense
	accounty and a
organs. b. brain	c. anguage d. nerves
6 Hikers could use an of the following	
	b.a mirror
a. a rescue flare	d night vision goggles
c.a fire signal	ols and arranged etters that give a specific
	y y contact the second
meaning.	b. Traffic lights
a. Talking	d. Writing
c. Facial expressions	e of hearing to communicate
0	b. Mongooses
a. Humans	d.a and b
c. Fireflies  9 is/are used to comm	
	b. Facial expressions
a. Talking  Fire signals	d. Language

4	Complete the following	ing sentences from the words between
	the brackets:	and agricellogs from the Mords patMee
	mough	form of sound that humans can communicate (Writing - Language
5	2 A encodes inform	mation in the form of flashes to guide sailors.
- 3	3 The tones of musical ins	(lighthouse - rescue flare struments can be detected by our
		(eyes - ears
1	Different languages are	considered (codes - light
-	Put (√) or (x):	
0	In order family	nmunicate, such as using traffic lights. (
	3 Red and groom to the	be translated, the brain must identify it.
1	3. Red and green traffic lig	thts are codes.
	A thumbs-down code m	leans that you are angry.
	Write the scientific te	code that can be received by the eye. (
	1 It is a pattern that has a	megning
	2 It decodes and interpret	s the information sent by sensory organs.
	3 It's a tool used by hikers	to get the attention of rescue helicopters.
6	Cross out the odd wo	rd:
Т		re - Traffic lights - Fire alarm
	2 Frefues - Humpback wh	ales - Humans - Dolphins
		what suits it in column (B):
	Column (A)	Column (B)
	1 A facial expression	c. is a way of communication by sound.
	2 Lighthouse	b. is a code in the form of symbols or
	3 Language ·	letters.
	4 Writing	tells others about what we feel.
		d. is a way of communication by light.

#### study the following figures, then answer the questions below:

The following figures represent different codes done by humans:



- a. Figure ( ) is a code that means you are angry.
- b. Figure ( ) is a code in the form of sound.
- c. Figure ( ) is a code that means you are saying "Well done".
- d. Figure (\_\_\_) is a code in the form of letters and symbols that have a meaning.

#### Give reasons for:

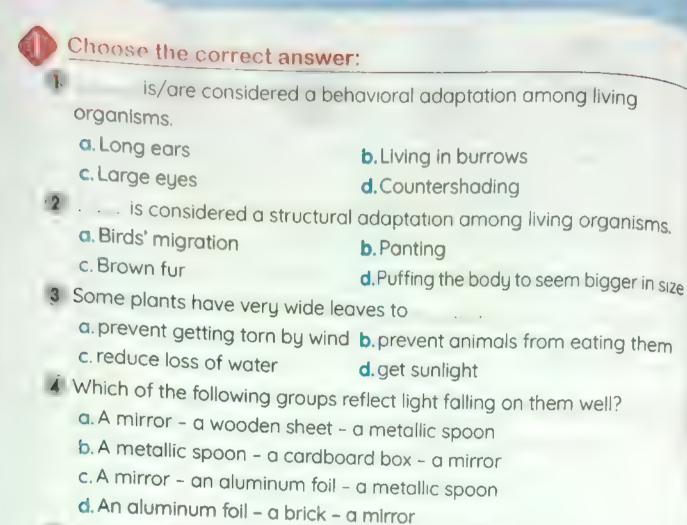
- Hikers always carry mirrors.
- 2 The light of lighthouses is very important for sailors.

#### What happens if:

- Tou see the red traffic light?
  - 2 You see the expressions on your friend's face while you are talking?

### Assess Your Learning

# School Book Questions On Unit 1



- 5. The property of \_\_\_\_\_ helps you to see yourself in the mirror.
  - a.refraction b.reflection c.absorption d.density
- On being exposed to danger, the \_\_\_\_\_ system helps in identifying and avoiding it.
  - a. circulatory b. digestive c. respiratory d. nervous

#### Compare between each of the following:

- Inhaled air and exhaled air during occurrence of the respiration process in human.
- 2 Structural adaptation and behavioral adaptation in one of the living organisms.
- Communication between humans and communication between animals.

Read the following sentences, then put true or false:		
a the store and the digestive system	(	_
The sense of hearing allows you to see the light of a lamp.	(	)
The esophagus is an important organ in the respiratory system.	(	)
The sense of touch allows you to feel the heat of a stove.	(	)
Your lungs are important organs in your respiratory system.	(	)
The ear is the sensory organ that allows you to hear the birds' sin	nair	na.
	(	)
Your heart is an important organ in the nervous system.	(	)
The eye is the sensory organ that lets you taste the sour flavor o	f	
lemons.	(	)
The diaphragm is an important organ in the digestive system.	(	)
Your skin is the sensory organ that allows you to feel the smooth	nes	S
of a cloth.	(	)
Complete the following sentences by using the right wo	rds	5
in brackets:		
(touching - hearing - light - eyes - ears - heart - brain -		
respiratory - lung - stomach - digestive)		
The sense of helps you to identify the noise.		
2 The send(s) a signal through the nerves that reaches the	, w	
so you interpret that sound as a bird's singing.		
The state of the s	yste	m
and the most important organ in it is the , while the system	n th	nai
supplies the body with oxygen is the system.		
Answer the following questions:		
1 Why does the night vision in humans differ from that in cats?		
Why can't bats see in the dark, but they can hunt their prey at ni	ght	?

### Project





>>> Bats are nocturnal animals. (They're active at night.)
الخفافيش كائنات ليلية؛ أي تنشط في الليل.



Bats, like bees and butterflies, can help plants and flowers.

الخفافيش مثل النحل والفراشات تستطيع مساعدة النباتات.





>>> Bats can fly fast like birds.

الخفافيش تستطيع الطيران بسرعة كالطيور،



Bats locate their prey such as mosquitoes by a property called echolocation.

الخفافيش تستخدم خاصية تحديد الموقع بالصدى لعرفة مكان الفريسة مثل البعوض.

How do bats locate things in the dark? كيف تحدد الخفافيش موقع الأشياء في الطلام؟

Bats use a property known as "echolocation" to locate their prey and hunt in total darkness.

#### How bats locate things:

- 1 A bat produces high-pitched sound waves through air.
- When these waves hit any object, it returns back to the bat so that it can detect the location of the prey.

يون بم الخفافيش خاصية تحديد الموقع بصدى الصوت لتحديد مواقع الفرانس في الطلام يقوم الحفاش بإرسال موجات صوتية في الهواء عندما ترتطم الموجات بأي جسم فإنها ترتد إلى الحفاش فيستطيع تحديد موقع الفريسة

### NTERDISCIPLINARY PROJECT THE SINAL AGAMA LIZARD

Habitat:

It lives in the dry and rocky environments of Eastern Egypt.

Food:

They feed on ants, grasshoppers, beetles, termites and other insects.



In order to survive in this harsh environment, this little reptile undergoes some structural and behavioral adaptations.

#### Structural adaptation:

- 11 It has a long, thin body to climb rocks and run quickly.
- 2 It has a scaly skin that traps the water in.
- 3 It has a tongue with a sticky surface to catch their prey.

#### Behavioral adaptation:

- 1 It is active during the hottest parts of the day.
- 2 It likes to hang out in areas with many rocks, hard gravel, and boulders
- 3 It saves its energy by hiding between rocks and it attacks its prey when it comes nearby.
- 4 It stands on the top parts of its toes to keep its belly high above the hot rocks.

The number of Sinai agama lizar ! some human activities, such as

- 1 Changing their natural habitat to build roads and sidewalks
- (2) Catching them to be sold as pets.



6 Investigating what happens when objects collide

# Get Started What I Already Know







n this unit, we will study the relationship between energy and motion.

#### The Relationship between Energy and Motion

- static objects moves when a proper force acts on them
- For example, a static ball remains static until the player kicks it

#### Example:

Look at this figure, the man is sitting on a wheelchair on the top of the ramp.

During

The man texert force because moving down the force of gravity pulls him down.



During
The man needs to exert more force to overcome the force of gravity.

) If the ramp is not smooth, the man will need to exert more force to move.

#### **Motion of Cars and Trains**

- Objects, such as trains and cars, need a source of energy, such as fuel, to move.
- >>> Heavy objects, such as trains, need more fuel than light objects, such as cars.

#### Science and Car Collision

- During collisions, we hear noise and objects get damaged.
- Modern cars are designed with a lot of safety equipment, such as seatbelts and airbags, to reduce the negative effects of collisions on the driver or the passenger.





### 70. 7.

## Сопшре Обрасичен

By the end of this concept students will your appur

- How force makes an object stop or move
- Pushing force and pulling force.
- Balanced force and unbalanced force.
- Air force.
- Gravity.
- ▶ Stopping the moving objects
  - a. Collision b. Friction force
- ▶ The relationship between force, energy and work

### Key Vocabula

- Energy
- Force
- Gravity
- Motion
- Friction
- Work

# Concept

## Starting and Stopping

#### Lamon

Activity 1 Can you Explain?

Activity 2 Truck Verses Airplane

Activity 3 Making Things Move

#### Lataun I

Activity 4 What Do You Already Know About Starting and Stopping?

Activity 5 Objects in Motion

Activity 6 Force

#### La constant de la con

Activity 7 Stopping Motion

Activity 8 Rolling Cars

#### LEUCH

Activity 9 Energy, Work, and Force

Activity 10 Record Evidence Like a Scientist: Truck Verses Airplane

## Lesson



## 1 Can You Explain?

>> An object stays static when it doesn't change its position.



Because there is no force acting on it.

> • يظل الجسم ساكنًا (لا يغير موضعه) لعدم وجود قوة تؤثر عليه.

>> An object moves when It changes its position.



Because there is a force acting on it.

> , يتحرك الجسم (يغير موضعه) ليجود قوة مناسبة تؤثر عليه.

- Static objects require a force to move them.
- Forces could be pushing or pulling forces.
- For a static object to move, the forces acting on it need to change.
  - تحتاج الأجسام الساكنة قوة لتحريكها.
  - و يمكن أن تكون القوة (دفع أو سحب)،
  - · لتحريك جسم ثابت، يجب أن تتغير مقدار القوى المؤثرة عليه.



The player needs energy to push the ball.





The boy needs energy to pull the bag.





#### Truck Versus Airplane



#### Truck Versus Airplane



» A Jet airplane is much faster than a truck. Because the jet's engine is much more powerful than the truck's engine · نطير الطائرة سرعة أكبر من الشاحلة؛ لأن محرك الطائرة أقوى بكثير من محرك الشاحنة.



#### Shockwave (Fastest world truck)

- . It has been fitted with three jet engines.
- · Its speed can reach 500 kilometers per hour.
- It is five times faster than a normal truck.
  - تم تزويد تلك الشاحنة بـ ٢ محركات لطائرة نفائة.
    - · تصل سرعة تلك الشاحنة لـ · · · كم في الساعة.
  - تلك الشاحنة أسرع من الشاحنة العادية بـ ٥ مرات.



## How Does It Move ?

- )) It moves and reaches record speeds by the pushing force of its powerful engines.
  - · تتحرك الشاحية ونسجل سرعات فياسية بمساعدة فوة دقع المحرك



### How Does It Stop ?

#### (Rocket design idea)

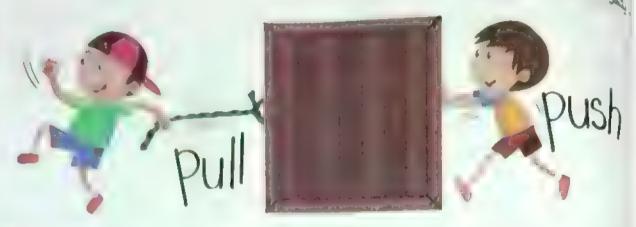
- >> Engineers installed
  - that help the driver to slow down the truck quickly
  - · قام المهندسور متركيب ٣ مطلات بفتحها السائق لإنطاء الشاحنة بشكل أسرع،



### Making Things Move

>>> An object moves when a pushing or pulling force acts on it.

يمدك الجسم عندما تؤثر عليه قرة (دفع أو سحب) مناسبة.



An object doesn't move when no force acts on it.

ويتمرك الجسم عندما لا تؤثر عليه قوة مناسبة.







Mention the kind of force: Push or Pull













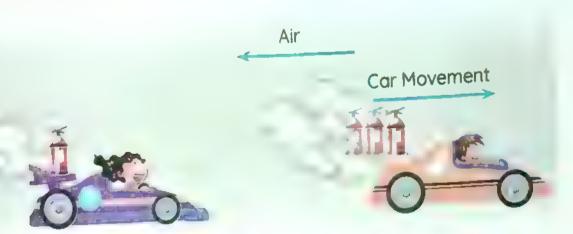


It can move some objects, such as: leaves of tree!.





- , Engineers attached a fire extinguisher to a static cart
- When air is released backward from the extinguisher, the cart begins to move forward.
- By increasing the number of fire extinguishers, the speed of the car increases and it covers a longer distance.
  - قام الهندسون بتثبيت طفاية حريق على عربة ساكنة.
  - عندما تتبعث الغازات من طفاية الحريق إلى الخلف تبدأ العربة في التحرك إلى الأمام.
    - عند زيادة عدد طفايات الحريق تصبح السيارة أسرع وتقطع مسافة أطول.

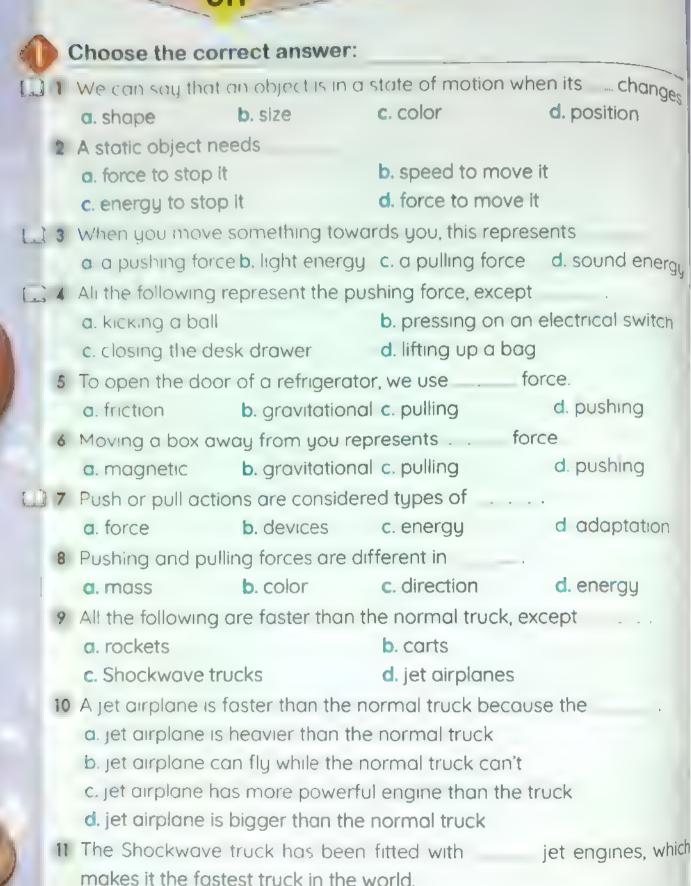


## Check your understanding?

- >> Put ( / ) or ( X ):
  - 1 To open a closed door, we must push or puil it
  - 2 Air is a force that can move some static objects

(

# Exercises on Lesson 1



b. three c. four d. five

a. two

	Stapet (1)
	To D
5	
n	
5)	
g)	
g) Il	
ss)	r

If the speed of a Shockwave truck	is about 500 km/hr,	the speed of
a normal truck may equal kr	m/hr.	
b. 600	<b>c.</b> 100	<b>d.</b> 450
the following have engines, excep	ot the	
a, jet airplane b. normal truck	c. Shockwave truck	d. bicycle
Wind can move some objects, such	QSandalaimidaaliilus I	
a, tree roots b. tree leaves	<b>c</b> . jet airplanes	d. rockets
15 By decreasing the number of fire	extinguishers fixed (	on the cart, its
speed		
a. becomes zero	<b>b.</b> remains constan	it
c. decreases	d. increases	
Complete the following senten	oes from the WO	rds between
the brackets:	ices nom are	
	ruck's driver to incre	ase its speed.
1 Three . help the Shockwave t	(engines	- parachutes)
2 A Shockwave truck records a high s		
	(pu	lling - pushing)
force.  3 A orl needs to pull a bag.		(fuel - force)
3 A girl needs to pull a bag. 4 force is moving an object a	way from you. (Pu	shing - Pulling)
	powerful than the	at of a normal
5 The engine of a jet airplane is	P	(more - less)
truck.  A violating the ball is a force.	(pu	illing - pushing)
6 Kicking the ban is a	e. (pu	illing - pushing)
<ul> <li>7 Opening a drawer is a force</li> <li>8 Parachutes help the Shockwave tree</li> </ul>		
8 Parachutes help the shockward with	(s	lowly - quickly).
y To slow down the speed of a Shoc	kwave truck, the driv	ers use
parachutes.		(5 - 3)
wind can move some objects, suc	h as a ",,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	(leaf - truck)
Willia Catiffic to contro objects, occ		

- 3 It's the force that moves the object towards you.
- 4. It's the fastest truck in the world.
- 5 It's a tool used to decrease the speed of a Shockwave truck

#### Cross out the odd word:

- 1' Push Pull Force Time
- 2 Lift the ball Kick the ball Catch the ball Throw the ball
- 3 Jet engine Pulling force Pushing force Increasing speed
- 4 Parachutes Rockets Normal trucks Shockwave trucks

## Choose from column (A) what suits it in column (B):

#### Column (A)

- 1 Shockwave trucks
- Wind blowing
- 3 Parachutes
- 1 Jet engines

#### Column (B)

- a can move the leaves of a tree.
- h help in decreasing the speed of the Shockwave truck
- c. are slower than rockets and faster than normal trucks.
- d help to start moving the Shockwave truck.

## Study the following figures, then complete the sentences below:



Figure (1)



Figure (2)

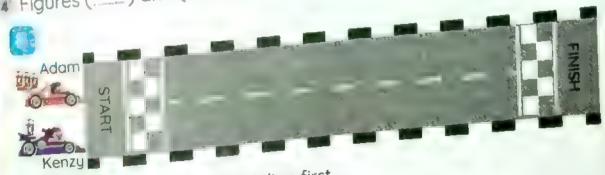


Figure (3)



Figure (4)

- 1 Figure ( ) is the fastest moving object, while figure ( \_\_\_\_) is the slowest object.
- 2 Figure ( \_\_) represents the fastest truck in the world.
- 3 Parachutes are used in figures ( \_\_) and (\_\_\_) to decrease their speed.
- Figures (.....) and (.....) use the same kind of engine.



- will reach the finish line first.
- distance than Kenzy.
- When the air is released \_\_\_\_\_ from the fire extinguishers, the car Science Prim. 4 - First Term 155 moves.



#### Motion

- The two cars move due to the force of the
- From the figure, we conclude that as we increase the number of fire extinguishers, the car becomes

Study the following figures, then mention the kind of force:



### Give reasons for:

- Pushing force and pulling force are different in direction.
- (2) Kicking the ball is done by the pushing force.
- A jet airplane is faster than a normal truck.
- A Shockwave truck is the fastest truck in the world.
- Parachutes are attached to the Shockwave truck.

### What happens if:

- A pushing or pulling force acts on a static object?
- 2 The driver of the Shockwave truck opens the parachutes?
- 3 The air is released backward from a fire extinguisher attached to a cart?
- You increase the number of fire extinguishers attached to a cart?

# esson 2



#### What Do You Already Know About Starting and Stopping?

When a force acts on a body:



 Using a force to move an object towards you. عندما تُحرك الجسم باتجاهك.

 Using a force to move an object away from you. عندما تُحرك الجسم بعيدًا عنك.



## Balanced or unbalanced forces:

» In tug-of-war game, two teams pull the rope in opposite directions.



The rope doesn't move.

 When the forces acting on the rope are balanced. الحبل لا يتحرك إذا أثرت عليه قوى متزنة. The rope moves towards the greater force

- When the forces acting on the rope are unbalanced.
- الحبل يتحرك في اتجاه القوة الأكبر إذا أثرت عليه قوى غير متزنة.
- >> From the previous two cases, we can conclude that:
  - If there are unbalanced forces acting on an object, this object will move.
  - If there are balanced forces acting on an object, this object will not move
    - إذا كانت القوى المؤثرة على طرفي الحبل غير متزنة، فإن الحبل يتحرك للقوة الأكبر.
      - إذا كانت القوى المؤثرة على طرفي الحبل متزنة، فإن الحبل لن يتحرك.

## 5 Objects in Motion

## Example of the motion of an object



- The boy holds a ball and stands beside a tree (starting position).
  - 2 The boy throws the ball, so the pushing force of his hand moves the ball through the air.
  - 3 The ball drops into the girl's hand by the pulling force of gravity.

**Gravity** It is the force that pulls the objects downward.

4 The girl stops the ball when she catches it using the pushing force in the opposite direction.

🗓 يقف الولد بجانب الشجرة (موضع البداية).

[2] تتحرك الكرة في الهواء بسبب قوة الدفع للولد.

3 قوة الجاذبية تسببت في سقوط الكرة بيد البنت.

قوة الجاذبية: هي القوة التي تسحب الأجسام لأسفل.

4 تقوم البنت بالتقاط الكرة وإيقافها عن طريق فوة الدفع أيضًا ولكن في اتجاه معاكس.

## For any object to be in motion:

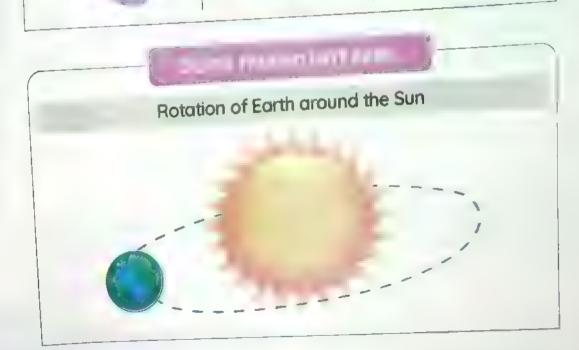
- A pushing or pulling force must act on it.
- A change in position happens as time passes.
  - 🥻 ليتمرك أي جسم لا بد أن يؤثر على الجسم قوة دفع أو سعب.
    - لا بد أن يمدث تغير لوضع الجسم مع مرور زمن معين.



It is the change in an object's position relative to هو تعبر موضع الحسم مع مرور زمن بالنسبة لنقطة ثابتة. a fixed point.

#### Some motion is easy to see.

A thrown ball A leaf falling A person walking





## Action 6 Force

- >> The world around us is in a constant motion.
- >> Some things move quickly, while others move slowly.
- )) All motion, fast or slow, is caused by force. Force is a push or pull

It is a push or pull that is applied to an object to change its position.

هو دفع أو سحب جسم مما يؤدي لتغيير موضعه.

#### Examples

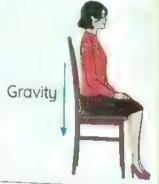


## Sitting on a chair:

Gravity is pulling the girl downward and holding the girl on the chair.



قوة الجاذبية تجذب البنت لأسفل وتعمل على ثباتها على الكرسي.





## 2 Holding a bag:

- >> The man's arm is pulling the bag upward.
- Gravity is pulling the bag downward.

، عندما ترفع حقيبتك:

قوة الجادبية تحدب الحقيبة لأسفل بينما ترفعها دراعك للأعلى،

Arm Pulling Force

Gravitu Pulling Force

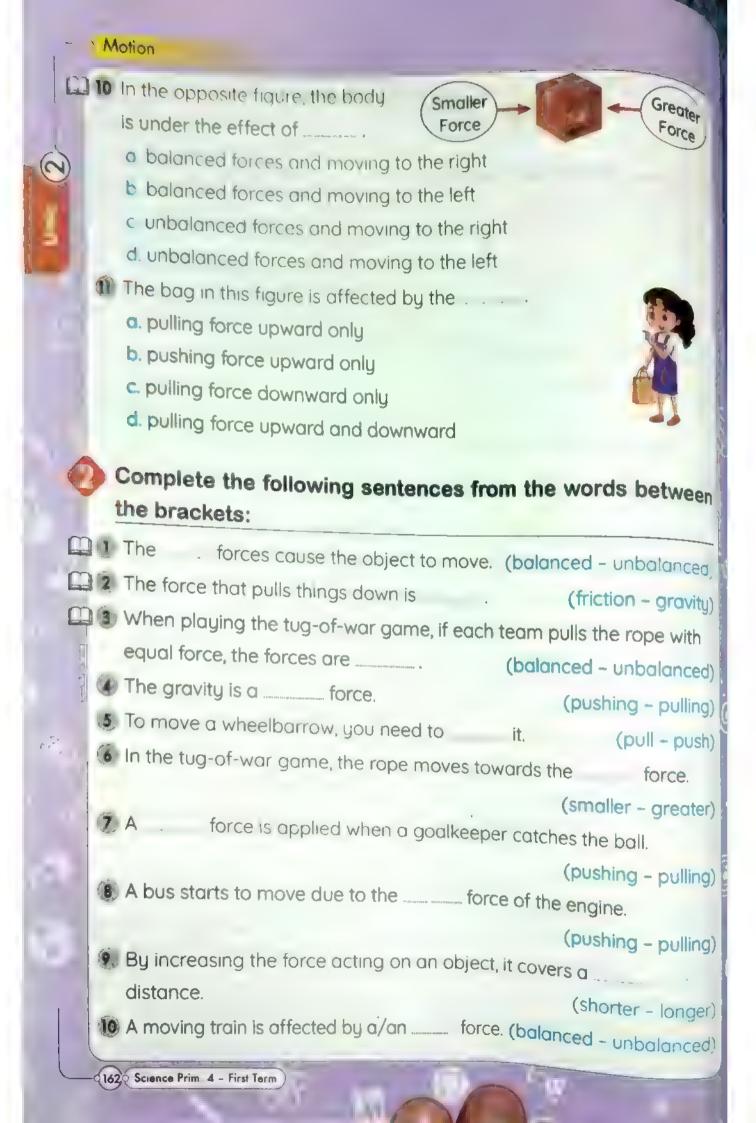


>>> The direction of motion is determined by the total force applied on the object.

• يتحدد اتجاه الحركة بمقدار القوى المحصلة المؤثرة على الجسم.

# Exercises on Lesson 2

4	Choose the correct answer:	
V	pushing and pulling forces can be a	used to
9	a. move objects	b. stop objects
	c. change the object speed	d. all the previous answers
13	Objects need a force to move, this	force is represented in
-	a. pushing only	b. pulling only
	c. pushing and pulling together	d. the Earth gravity only
	All of the following are examples of	pulling forces, except
ı	a. kicking a ball	b. pulling the rope
	c. opening the desk drawer	d. lifting up your bag
2(	You can see the movement of all the	ne following objects, except the
	movement of	
	a. a flying airplane	b. a running horse
	c. sea waves	d. the planet Earth
6	In the tug-of-war game, the two te	
	a. push the rope in the same direct	
	b. pull the rope in opposite direction	
	c. push the rope in opposite direct	00
١,	<ul> <li>d. pull the rope in the same direction</li> <li>A ball thrown in the air is affected be</li> </ul>	by the force of your hand and
1	the force of gravitu.	
1	a pull push b. pull - pull	c. push - pull d. push - push
	The force that pulls the objects do	own towards the center of the Earth
	ie .	
	a. gravity b. pushing	
m	When a body moves forward, its	changes.
	b. size	c. color d. shape
m	When a ball stands on the ground	without moving, the forces acting on
	it are	e pushing it up. d not equal
	a. balanced b. unbalanced	c. pushing it up d. not equal



-	put (√) or (×):	
1	cravitational force is an upward pulling force	
	When a pen falls down from your hand, the acting force is the gravity	
-	SATCH	
,	When the static body is affected by balanced forces, the body moves.	
فحد		-
7	The seesaw moves up and down because the forces that act on it are	
	unbalanced.	И
1]	When the position of the body changes from a fixed point, we can	
لسلة	say that the body moves.	)
1	Gravity pulls objects towards the center of the Earth.	,
	An object needs force to move, while it doesn't need any force to stop	
	at the hall in annosite	ì
ķ	8 In the tug-of-war game, the two teams push the ball in opposite	)
	directions.	}
	9 Some motion can't be seen by the eyes, such as a leaf falling off	)
	g tree.	n
6	Complete the following sentences using the words between	
10	the brackets:	_
	(downward - pushed - forward - fixed - pulls - backward - position)  when the	ne le
	1 On fixing a fire extinguisher to a cart, the cart moves when tr	
	air moves backward.	
	2 The gravity . objects to the Earth's surface.	
	A bike needs to be to move.	
	4 Motion is the change in an object's relative to a point	•
	Write the scientific term:	
	1 It's the change of the position of an object relative to a fixed point.	
	2 It's the force that pulls objects towards the Earth's center.	
	3 It's the force done to move the object away from you.	
	▲ It's the force done to move the object towards you.	
	5 A game in which two teams pull the rope in opposite directions.	



(2)

## Cross out the odd word:

- Push force Puli force Gravity Downward
- A person walking Earth motion A leaf falling A thrown ball Tug-of-war - Opposite directions - Push force - Pull force
- A static object moves Balanced force Unbalanced force 5 A waiking boy - A running horse - A sleeping cat - A flying kite



# Choose from column (A) what suits it in column (B):

#### Column (A)

- Motion
- Gravity
- 3 Pull force
- Push force

## Column (B)

- a. is the force that attracts the objects toward Earth's surface.
- b. means that an object moves away from you.
- c. is the change of an object's position relative to a fixed point.
- d. means that an object moves towards you.

Study the following figures, then classify them as (push or pull):

Example	ving figures, the		
Push		2	3
of and the contract of the con	5	6	7

#### Starting and Stopping



## Study the following figures, then choose the correct answer:



- Figure (1) represents
- forces.
- (balanced unbalanced)

- Figure (2) represents . . .
  - forces.
- (balanced unbalanceu)

3. The rope will move in

- (figure (1) figure (2))
- The two teams are (pulling pushing) the rope in (the san e opposite) direction(s).



#### Study the following figure, then complete:

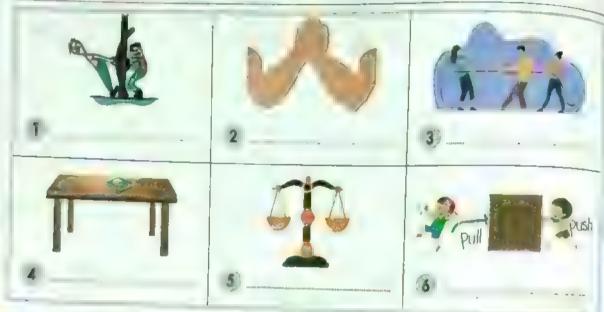
The opposite figure represents an apple falling from a tree and a boy catching it.

- a. The apple falling down is considered a force.
- b Catching the apple is considered a

force.



Study the following figures, then classify them as barrely or unbalanced forces:



#### Give reasons for:

- Sometimes apples fall from trees.
- 2 Sometimes the rope moves in the tug-of-war game.
- 3 Sometimes the rope doesn't move in the tug-of-war game.

#### What happens if:

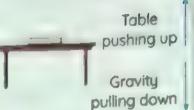
- 1 A static object is affected by balanced forces?
- 2 A static object is affected by unbalanced forces?





#### **Stopping Motion**

- » A static book on a table is affected by balanced forces:
  - 1) It is pulled down by the force of gravity
  - 2 It is pushed up by the force the table exerts



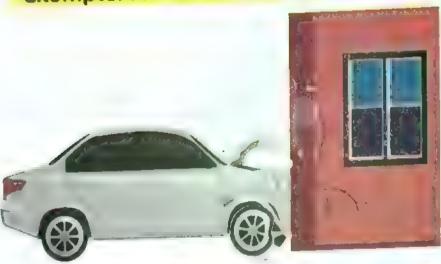
## **Stopping Motion**

) A moving object only stops when:

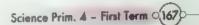
A force of the same amount is applied to it in the opposite direction from which it is moving.

تتوقف الأجسام عن الحركة عندما تكون القوى المؤثرة على الجسمُ متساوية في المقدار ومضادة في الاتجاه.

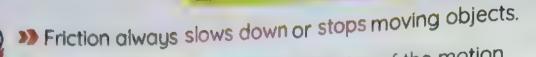
## Example: A car crashes into a wall.



- The car will stop because the wall applied a force to the car with the same amount and in the opposite direction.
- تتوقف السيارة عن الحركة عند اصطدامها بالحدار، حيث يؤثر الحائط على السيارة بقوة مساوية لقوة السيارة وفي اتجاه معاكس.



## Friction Force



>>> Friction acts in the opposite direction of the motion.

سل أوة الاحتكاك على إبطاء الجسم أو إيقافه. • تؤثر أوة الاحتكاك في عكس انجاه أوة الجسم.

## Example: A car runs out of gas.

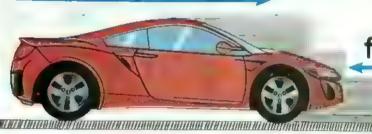
- >> The car will slow down until it stops due to:
  - The friction between the ground and the car's tires.
  - 2 The air that rubs against the car.

على السيارة سرعتها حتى تتوقف نتيجة ل

🛐 قوة الاحتكاك بين إطارات السيارة والطريق.

[ نوة احتكاك الهواء بسطح السيارة.

#### Car movement



#### Direction of friction of the air

Direction of friction of the road

#### Friction

It is a force that is exerted when objects rub against each other. هي القوة التي تظهر بين سطحي جسمين متلامسين.



**Rolling Cars** 

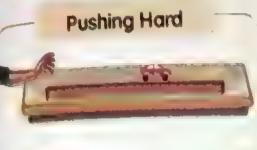
The Effect of Force on a Static Object

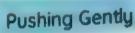


Toy car [2] Measuring ruler











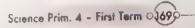
- 1 Push the toy car hard from the starting point, then record the distance covered by the car using the measuring ruler.
- 2 Repeat the previous step several times and record this data in a table, then calculate the average distance.
- 3 Push the toy car gently from the starting point, then record the distance covered by the car using the measuring ruler.
- 4 Repeat the previous step several times and record this data in a table, then calculate the average distance.



Table (A): When the toy car is pushed hard:

Tuble (A). When a		·		
Trial	1	2	3	4
Go es .	44	14	15	16
Distance		14	10	

Average distance = 
$$\frac{11 + 14 + 15 + 16}{4} = \frac{56}{4} = 14 \text{ cm}.$$



#### - Motion

Table (B): When the toy car is pushed gently:

Trial	1	2	3	4
Distance	8	10	12	14

Average distance = 
$$\frac{8+10+12+14}{4} = \frac{44}{4} = 11 \text{ cm}.$$

## Observations

#### White the state of 
the car moves . . . and covers a cover distance.

عند دفع السيارة برفق:

تتحرك السيارة ببطء وتقطع مسافة أقصر،

· When we push the car hard. the car moves faster and covers a longer distance.

، عند دفع السيارة بقوة:

تتحرك السيارة بسرعة وتقطع مسافة أطول.

## Carich man

## By increasing the acting force on a body:

- It moves for a longer distance.
- · Its speed increases, and its kinetic energy increases.
  - كلما زادت القوة المؤثرة على الجسم يتحرك الجسم مسافة أكبر، وتزداد سرعة الجسم

وطاقة حركته.

## >>> By applying the same force on different objects:

- The small car moves for a long distance.
- The moves for a short distance.

ه عندما تؤثَّر نفس القوة على أجسام مختلفة:

السيارة تسير لمسافة كبيرة - الشاحنة تسير لمسافة صغيرة.



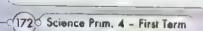




# Exercises on Lesson 3

Choose the correct answer:	
called , june and another transfer of the contract of the cont	bject rubs against another object is
a. friction b. gravity	c. push d. pull
Friction force decreases the	of a moving object.
a.mass b.speed	C. volume d. a and b
<ul> <li>The book in this figure is affected</li> <li>a. pushing force downward only</li> <li>b. pulling force downward only</li> <li>c. pulling force downward and the</li> </ul>	
d. pulling force upward and the p	ushing force downward
A moving body stops when	. force in direction is applied
to it.	
a. the same – the same	b. the same - the opposite
c.a greater - the same	d.a smaller - the opposite
5 For a static object, all the following	
a. force b. speed	
6 Friction force always acts in	direction to the moving force.
a. the same b. the opposite	c.a parallel d.a perpendicular
7 The car will move upward the slo	ppe when:
a. Moving force < Friction force	
b. Moving force = Friction force	
c. Moving force > Friction force	6
8 Which car covers the longest dis a. A small car pushed gently c. A small car pushed hard	b. A big truck pushed hard d. A big truck pushed gently
By decreasing the force acting a	b. decreases
a. increases c. remains constant	d. becomes zero

(stop ~ remain in motion)



5 On throwing a ball up in the air, it will

7 Without friction force, a moving object will

6 When a car crashes into a wall, it will

(7)

	on rubbing our hands, we feel warm due to force.		
	(magnetic - tric	tion	)
1	A heavy object requires a force to move. (smaller - green	ater	)
ı	By increasing the kinetic energy of an object, it travels a		П
ı	distance. (shorter - lor	nger	)
Į.	On throwing a ball in the air, it is affected by the force of y	our	
	hand. (pushing - pu	lling	)
Į			
3	Put (√) or (X):		
	The force that slows down or decreases the speed of an object	ZCL I	)
1	gravity.		4
	For a moving car, there's a friction force between its tires and the	100	1
	only.	(	
	Friction force speeds up a moving object.	(	
j	Air resists the motion of a car.	(	
Ĭ	The book on the table is static because it is affected by balanced	1	1
	forces.	1	)
	The ball on the ground is affected by the pulling force of gravity.	the	
	The direction of force is determined by the total force applied on	(	)
	object.	ion	is
	The moving body stops when the same force in the same direct	(	5
	applied to it.	(	)
	<ul> <li>A static object remains as it is until a balanced force acts on it.</li> <li>Friction force always acts in the opposite direction to the moving</li> </ul>	forc	e.
	10 Friction force always acts in the opposite direction to the	(	)
	n On pushing two similar toys with the same force, they cover diff	ere	nt
	distances.	(	)
	Objects travel for a short distance when they are pushed gently	(	)
	Kinetic energy decreases by increasing the object speed.	(	)
	As the object becomes faster, it covers a long distance.	(	)
	A big truck covers a longer distance than a small car if they are pu	ushe	ed
	with the same force.	(	)
			_/

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Complete the follow the brackets:	ving sentences using the words between
(increases - friction	n - becomes zero - balanced - opposite -
d	ecreases - Unbalanced)
forces in	ng into a wall due to being affected by ions.
forces cause th	ne change of an object's position.
when a moving car ru	ons out of fuel, its speed gradually due to
The curs speed	ed on a moving car at the same direction of its
(Slower - bigger ma	ISS - faster - longer - more - less - shorte-
distance.	Pall hard, it moves and covers a
When a boy kicks a bodistance.	all gently, it moves and covers a
	force than a small car to be stopped, as it has
Write the scientific t	term;
It's the force that pulls	objects towards the contact of the
and force that oppo	ses the movement between touching and
3 It's a push or pull that i	s applied on an object to move it.
Cross out the odd w	ord:
Friction - Gravity - Pull	
Choose from column	(A) what suits it in column (B):
Column (A)	Column (B)
Balanced forces	
2) Unbalanced forces	<ul><li>a. causes the objects to fall downward.</li><li>b. don't cause any change to the object</li></ul>
	state.
3 Friction force	c. make a static object move.
4 Gravity	d. slows and stops the moving object.
1 2 3	4

## Study the following figure, then complete:

- Label the following two forces:
- a. Force (1):
- b. Force (2):



#### Look at the following figure, then answer:

Starting **Point** 

Which of these toy cars is affected by greater force? (Give a reason for your answer.)

### Look at the following figure, then answer:

On rolling a tennis ball and a basketball on a court with the same force, which one covers a longer distance? And why?



#### Give reasons for:

- 1 Friction force stops a moving object.
- 2. When the girl stops pedaling, the bike stops after a short time.
- 3 When a moving car crashes into a wall, it stops moving.
- When you push the toy car gently, it moves for a short distance.

#### What happens if:

- A girl on a bike stops pedaling?
- A moving car crashes into a wall?
- You push a toy car gently (concerning its distance)?

You push a toy car hard (concerning its kinetic energy)?

## Lesson 4



#### 9 Energy, Work, and Force

- >> The relationship between energy, work, and force:
  - To push a car along a flat road, this needs a lot of force.
  - When you push the car, energy transfers from your body to the car.
  - When the car moves, you are doing work.



، لكي تدفع سيارة على طريق مستو، يتطلب تحريك السيارة قدرًا كبيرًا من القوة.

. عندما تدفع السيارة تنتقل الطاقة من جسمك إلى السيارة،

عندما تتحرك السيارة، فأنت تقوم بشغل.

- · Force and energy are different, but they are related to each other.
- Force transfers energy from one object to another.
- Force is something that changes energy so that it can do work.
- Work is the energy transferred by a force to move the object.
  - · القوة والطاقة مختلفتان، لكنهما مرتبطتان ببعضهما البعض.
    - · القوة تنقل الطاقة من جسم إلى آخر،
    - · القوة هي المؤثر الذي يغير الطاقة للتمكن من بذل الشغل.
  - الشغل هو مقدار الطاقة اللازمة لتحريك جسم من خلال القوة المؤثرة فيه.



## Activity 10

## Record Evidence Like a Scientist: Truck Versus Airplane

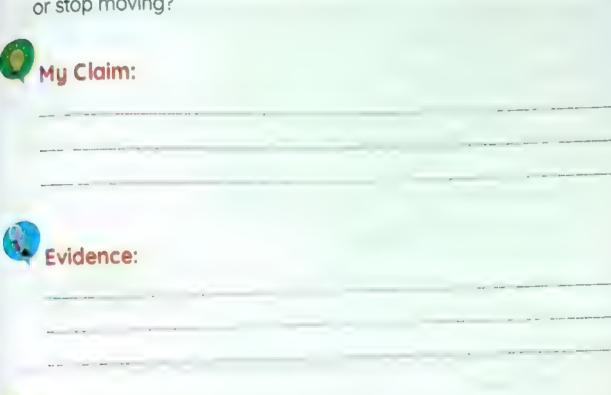


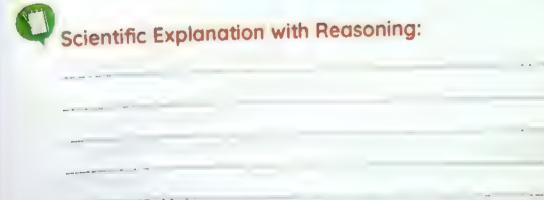
Now that you have learned about the role of balanced and unbalanced forces in starting and stopping, review Truck Versus Airplane again. You first saw this in Wonder



## Question:

How do forces act on different objects to make them start moving or stop moving?





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# Exercises on Lesson 4

## Choose the correct answer:

- The goal keeper can catch the ball by applying
  - a \_\_\_\_\_ force on the ball
  - a. pulling

b. pushing

c. friction

d. liftina



- a. force b. work
- c. energy
- d. speed

- 3. Work is done when we

  - a read **b.** sleep
- c. push a wall
- d. kick a ball
- 4 To move a static object, this requires a proper
- to act on it

- a. force b. work
- **d.** speed
- 5 When the man pushes the car, kinetic energy
  - a. changes to potential energy
  - b. becomes zero
  - c transfers from the man to the car
  - d. transfers from the car to the man



#### Complete the following sentences from the words between the brackets:

- 1 To exert a force on an object, a/an is needed. (work energy)
- transfers energy from an object to another. (Speed Force)
- 3 When a static pal , there's no work done.

(moves - doesn't move)

Lifting up a bow ing bail requires energy than a football.

(more - less)

- 5 To stop or start moving an object, a is required. (sound force)
- is done when a force moves an object. (Energy Work)
- 7 When work is done, there's of energy. (transfer no transfer)

put (/) or (x):		
You are doing wor	k while sitting on a chair.	( )
Fnergy is required	to do work.	( )
When the player h	it the ball with the hockey bat, we say tha	it he does
work.		( )
Kicking the ball ha	rd needs a strong pulling force.	( )
move, we can say any work.	great force to move a box, but the box do that the boy consumed energy but he did	n't do
When you push a	table, energy transfers from the table to y	our body.
Write the scienti	fic term:	
i it's the effect that of	affects an object and changes its state.	
it is the energy nee	eded to move an object by applying a forc	e on it.
	umn (A) what suits it in column (B):	
Column (A)	Column (B)	
1 Friction	a. It's the ability to do work.	
2 Motion	b. It's the force that pulls things downwa	rds.
-	c. It's the change in the position of the ob	oject.
3 Energy 4 Gravity	d. It's a force that arises between the sur of two contacted bodies.	faces
2 1 1 2000 Make the distribution country symbols	a sign and respectation are generalized by a sign and response and analysis of the sign and anal	
Give reasons for	*	
	es the car does work.	3
2 The boy who push	es the wall doesn't do any work.	X



## **Energy and Motion**

## Execute Output (1)

#### By the end of this concept, students will learn about:

Roller coasters.

Basics of energy.

Properties of energy.

Types of energy.

Kinetic energy and potential energy.

#### the p. Morrowson, e. q.

Kinetic Energy

Potential energy

Thermal energy

Chemical energy

# Concept 2

## **Energy and Motion**

	1/00
Activity 1	Can you Explain?
Activity 2	Roller Coaster
Activity 3	What Do You Already Know About Energy and Motion?
	11001
Activity 4	Energy Basics
Activity 5	Kinetic and Potential Energy
Activity 6	Forms of Kinetic and Potential Energy
Activity 7	Types of Energy
	S DESCRIPTION OF THE PARTY OF T
Activity 8	Easy Life Tool
Activity 9	Record Evidence Like a Scientist: Roller Coaster

# esson

#### Can You Explain?



A sand surfer



A ball on the ground



A ball moving in the air



A book on the table

- In figure 0, a sand surfer moves fast down the ramp.
- ) In figure 2, the ball on the ground has no energy.
- In figure (3), the ball moves in the air and has kinetic energy.
- In figure . the book on the table stores potential energy.
  - . في الشكل 🕥 ، يتحرك الشخص الذي يتزلج على الرمال بسرعة كبيرة لأسفل المنحدر -
    - ن أراشكل 2)، الكرة على الأرض ليس لديها طاقة.
    - ، في الشكل 😉 ، تتحرك الكرة في الهواء ولها طاقة حركية.
    - ، في الشكل 🖒 ، الكتاب الموجود على الطاولة مخزن بداخله طاقة وضع.

#### From the previous explanation, we conclude that:

- Static objects have no kinetic energy.
- · When static objects start to move, they get kinetic energy.
- When an object moves up a hill, it stores potential energy.
- · When an object moves down a hill, its potential energy changes into kinetic energy.

#### من الشرح السابق نستنتج أن:

- الأجسام الساكنة ليس لها طاقة حركية.
- عندما تبدأ الأجسام الساكنة في الحركة، فإنها تكتسب طاقة حركية.
  - عندما يتحرك الجسم لأعلى التل، فإنه يخزن بداخله طاقة وضع.
- عندما يتمرك الجسم أسفل التل، تتفير طاقة الرضع إلى طاقة حركية.

**Roller Coaster** 

قطار الملاهي السريع Roller Coaster



At the beginning,

electricity and motors carry the cars up to the top of the hill.

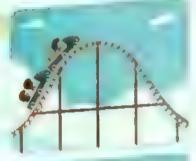
تعمل الكهرباء والمحركات على حمل عربات القطار لأعلى المنحدي



#### أثناء الصعود لأعلى - During moving upward ، بالمعود العالم الم

 The stored potential energy increases gradually.

• تزداد طاقة الوضع المُخزنة داخل القطار تدريجيًّا.





#### عند أعلى المنحدر - (At the highest point (on the hill)

 The stored potential energy becomes maximum.

تصبح طاقة الوضع المغزنة أكبر ما يمكن.





#### أثناء الابزلاف - During sliding down

 The stored potential energy is converted gradually into kinetic energy. As we move down, the speed increase and the kinetic energy increases.

تتحول الطاقة المفتزنة لطاقة حركية تدريجيًا.

كلما اقتربنا من الأرض، تزيد سرعة الجسم وطاقة حركته.







Roller coaster cars don't need electricity during sliding down. Because the stored potential energy is converted into kinetic energy.

#### What happens if...



- Roller coaster cars move up the hill (according to the energy)? The stored potential energy increases.
- 2 Roller coaster cars move downhill (according to the energy)? The stored potential energy is converted into kinetic energy.
- 3 Roller coaster cars stop on the hill (according to the energy)? The kinetic energy becomes zero. The stored potential energy becomes maximum.

As the height increases (While moving up)



Potential energy increases

As the speed increases (While moving down)



Kinetic energy increases

- A static object on a hill stores potential energy.
- When the object moves, it gains kinetic energy.
- A static object on the ground has no energy.



#### 3 What Do You Already Know About Energy and Motion?

#### Importance of Energy in Our Life

Our bodies store chemical energy that we get from the food we eat.



2 Thermal energy helps us in cooking food



3 Light energy helps us in lighting houses and streets.



Electrical energy helps us in operating electric devices.



- تخزن أجسامنا الطاقة الكيميائية التي بحصل عليها من الغذاء.
  - الطاقة الحرارية تساعدنا في طهي الطعام
  - الطاقة الضوئية تساعدنا في إنارة المنازل والشوارع،
  - الطاقة الكهربية تساعدنا على تشغيل الأجهزة الكهربية.

>> Put ( / ) or ( / ):

A bar of chocolate has no energy.

#### **Moving Energy**



The ball on the ground has no energy.
الكرة عنى الأرض ليس لديها طائة.



Z Kinetic energy transfers from the player's foot to the ball, so the ball moves.

تنتقل طاقة الحركة من قدم اللاعب إلى الكرة فتتحرك الكرة.



3 The ball moves in the air because it gains kinetic energy.

تتحرك الكرة في الهواء نتيجة انتقال طاقة الحركة إليها.



4 Kinetic energy transfers from the ball to the goal net which vibrates.

تنتقل الطاقة من الكرة للشباك التي تهتز،

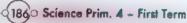


Energy affects objects and makes them move or change their places.

الطاقة هو ما يؤثر في الأجسام المختلفة ويجعلها تتحرك أو تغير من موضعها.

**Energy** • It is the ability to do work or to make a change

الطاقة مي القدرة على بذل شغل أو إحداث تغيير.



# Exercises on Lesson 1

## Choose the correct answer:

	Choo	
P	When an object moves down a ramp, its stored potential energy	. ,
10	a. increases	1
	c. changes to a less active form of energy	
	d. changes to a more active form of energy	
2	The energy gained by a ball when it falls from above is ene	rgy
	a. potential b. kinetic c. light d. chemical	
3	A static ball on the has no energy.	
-	a. ramp b. table c. ground d. chair	
Î	help(s) the cars of roller coasters to move up the ramp.	
	a. Electricity b. Motors c. Generators d. a and b	
5	At the highest point on the ramp, the stored energy of the object	ا مر شور
	a. increases  b. decreases	
	c. becomes zero d. becomes maximum	
6	The roller coaster cars don't need electricity when	
	a. moving up b. sliding down d. a and b	
	c. starting motion  d. a and b  are down, which of the following rem	ains
7	As a roller coaster moves up or down, which of the following rem	
	constant?  b. Kinetic energy	
	d. The object's mass	
	c. Potential energy In the opposite figure, the equals zero.	
8	a. book's mass  b. book's height	
	c book's speed d. book's energy	1
1	All of these objects have energy, except for	
	a, a truck moving on a flat road b a static toy car of a table	
	a packetball moving in the air d. a static ball on the ground	
1	As the object's increases, its kinetic energy increases.  Increases, its kinetic energy increases.  C. potential energy d temperature	е
I	Humans need the energy stored in food to do all daily active a kinetic b. chemical c. thermal d. potential	
1	O. KITIEUC	000
	Science Prim. 4 - First Term	1 A COLA

	<sup>1</sup> Motion
	When a moving ball hits the goal net, it vibrates because the energy of the ball is transferred to it.  a. sound b. light c. thermal d. kinetic
-(7)	The state of the s
	Complete the following sentences from the words between
	or denets,
	On the top of a ramp, energy is maximum. (potential ~ kinetic)
	energy is zero. (potenta)
	A book on the second shelf in a cupboard stores energy than
	The roller coaster moves when sliding down a ramp.
	(faster – slower)  helps the roller coaster move down the ramp.
	(An electric motor - Potential energy)
	The energy of an object moving horizontally doesn't change.
	(potential - kinetic)
	On kicking a ball, energy transfers from your foot to the ball.
	(potential – kinetic)
	When a person pushes a car forward, his body begins to sweat
	heavily because his body his stored energy. (increases - consume:
4	Put (/) or (x):
	The apple on the tree has no energy, while it gains energy when falling down.
	2. The speed of a roller coaster increases as it moves down the ramp.
	A Static object at the top of the ramp has no live in
	A roller coaster doesn't need electricity when moving down the ramp.
	When the roller coaster slides down fast, its kinetic energy increases.
	The moving objects have energy, while the objects that don't move
	have no energy,
	As the height of an object from the Earth's surface increases, its
	potential energy decreases.

	Energy and Motion O-					
	When you kick a ball, kinetic energy is produced.  When you kick a ball, kinetic energy is produced.  ()  A static ball moves on the ground if it is affected by a force.  ()  We eat food to gain energy.  ()  Complete the following sentences using the words between					
0	(motor - height - potential energy - electrical energy -					
2	kinetic energy - speed)  By increasing an object's, its kinetic energy increases, while by increasing the from the ground, potential energy increases.  When a roller coaster moves down a ramp, the cars don't need is converted into  A can change electrical energy into kinetic energy.					
A	write the scientific term:					
9	It's the energy stored in the object at the top of the ramp.  It's the energy gained by an object due to its motion.  It's a form of energy that increases when the speed of an object increases.  It's the energy that helps the static cars of a roller coaster to move up.  It's the energy stored in the food we eat.					
3	Cross out the odd word:					
	Potential energy - Object's height - Object's speed  Kinetic energy - Object's height - Object's speed  Choose from column (A) what suits it in column (B):					
	Choose from Column (B)					
<ul> <li>While moving up,</li> <li>While sliding down,</li> <li>a. has no energy.</li> <li>b. an object has the most potential energy.</li> <li>c. a static object has the most kinetic energy.</li> <li>d. notential energy.</li> </ul>						

- At the top of the ramp,
- A static object on the ground,
- d. potential energy changes into kinetic energy gradually.
- e.kinetic energy changes into potential energy gradually.

# Study the following figure, then complete: energy increases when the roller coaster moves from (A) to (B). energy increases when the roller coaster moves from (B) to (A). The roller coaster at point ( ) has the highest potential energy. and help the roller coaster to move from (B) to (A).

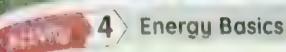
#### Give reasons for:

- While moving upward, the stored potential energy increases.
- While moving down the ramp, the kinetic energy increases.
- 3 Electricity is very important to operate a roller coaster.

## What happens if:

- 1. Roller coaster cars move up the ramp?
- Roller coaster cars slide down the ramp?
- Roller coasters reach the top of the ramp?
- Roller coasters stop at the ground?





The Relationship between Energy, Force and Work

Example: When the boy pushes the box,

- The boy needs ment to move the box.
- The boy exerts pushing force on the box.
- When the box moves, work is done.

  - آ يحتاج الولد إلى الطاقة ليستطيع تحريك الصندوق. 2 يقوم الولد ببذل قوة دفع لتحريك الصندوق.
    - (3) عندما يتحرك الصندوق نقول: إن الولد قد بذل شغلًا.
  - Energy It is the ability to do work or to make things happen.
    - Work 6 It is the force that causes an object to move.

#### Properties of Energy

Energy can be stored and changed (transformed) from one form to another.

Example . Roller coaster

- Most forms of energy can't be seen.
  - Electrical energy Examples • Heat energy • Sound energy • Chemical energy
- The work done by energy can be seen and measured Example • The goal net vibrates because kinetic energy transfers from the ball to it.

#### Activity

#### Kinetic and Potential Energy



Scientists classify energy into two types:

#### **Potential Energy**





• It is the energy stored in an object due to its position.

ه مي الطاقة الختزنة داخل الجسم بسبب موضعه.

#### Example:

When you raise the ball.

 It is the energy that an object has due to its motion.

. هي الطاقة التي يمثلكها الجسم بسبب حركته.

#### Example:

When you leave the ball to fall.

As the height increases



Potential energy increases

Higher potential energi



Lower potential enerau

As the specomeneoses



Kinetic energy increases



Lower speed - how - write energy



Higher speed = higher kinetic energy

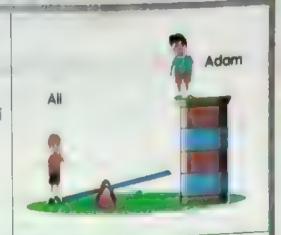
- >> Potential energy means that an object is ready to do work or to be active.
- >> An object gains kinetic energy when it starts moving.

• طاقة الوضع تعني أن جسمًا ما جاهز لبذل شغل.

# Example: Potential energy changes to kinetic energy:

Adam on the tower has high potential energy.

أدم لموق البرج لديه طاقة وضع كبيرة.



when Adam jumps down, his potential energy is converted into kinetic energy.

عندما يقفز آدم لأسفل تتحول طاقة الوضع إلى طاقة حركة.



Kinetic energy is transferred to Ali, which pushes him up in the air.

تنتقل الطاقة الحركية من آدم إلى على لتدفعه لأعلى في الهواء.



During Ali's movement in the air, kinetic energy is converted gradually into potential energy.

أثناء ارتفاع علي لأعلى تتحول طاقة الحركة إلى طاقة وضع تدريجيًا.



# Exercises on Lesson 2

	Choose the correct answer:	
4	All types of energy can be classific	ed into two main groups, which are
	an - co-construct on color day day day (b) (c). If	
	a. light energy and sound energy	
	b. chemical energy and electrical e	
	c. potential energy and kinetic ene	
	d. magnetic energy and thermal e	
L	The force that causes an object to	
	a. work b. potential	c. gravity d. pull force
	The force is the effect that changes	
	a. energy into work	b. work into energy
	c. an object's mass	d. an object's temperature
	A roller coaster contains all the follow	
	a. electrical b. potential	
	S Kinetic energy is the energy gained	d by an object due to its
	a. position b. shape	c. motion d. size
	Mhen an acrobat player jumps do	wn, his increases.
	a. speed	b. height
	c. mass	d. potential energy
	Complete the following senter	nces from the words between
	the brackets:	
	1) When an object has energy	y, it is ready to be more active.
		(potential - kinetic)
	2 Kinetic energy when an obj	ect stops moving
	,	(increases - becomes zero)
	3 When a book is moved from a high	
	operall	(decreases - increases)

When a book is raised from the ground to a table, it stores .

(kinetic - potential)

energy.

Put (/) or (x):
All energies can be classified into potential and kinetic energies. ( )
Thermal energy is used in cooking food and boiling water.
A static object moves when it gains potential energy.
In a roller coaster, kinetic energy is converted into potential energy and
vice versa.
As an object moves faster, its potential energy increases.
Some forms of energy can be seen by the eyes, such as light and
electrical energies.
Force gives us energy that enables us to do work.
We can measure what energy can do when the object changes its
position.
Complete the following sentences using the words between
the brackets:
(decreases - potential - Light - kinetic - increases)
1 When an apple moves down from a tree, energy changes into
energy.
2 If you throw a ball upward, its kinetic energy and its potential
energy
energy is a form of energy that transfers through the air in
a form of waves.
Write the scientific term:
1 It's the energy stored in an object due to its position.
2 It's the energy that an object gains due to its motion.
3 It's the effect that changes energy into work done.
It is a force that causes an object to move a distance.



## Choose from column (A) what suits it in column (B):

#### Column (A)

- Food
- Kinetic energy
- Potential energy

#### Column (B)

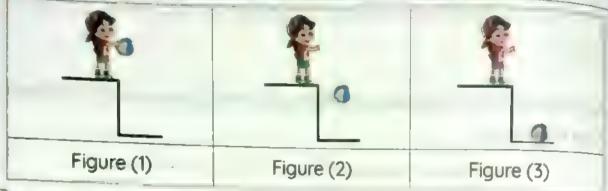
- a.can be transformed into potential energy.
- b.is a source of energy for humans.
- c.is the stored energy in an object.
- d.cannot transform into another form of energy

energy

#### Cross out the odd word:

Thermal energy - Chemical energy - Sound energy - Light energy

#### Study the following figures, then complete:



- In figure (2), . . energy is converted gradually into
- In figure (1), the ball has energy only.
- In figure (3), the ball has energy

#### 0

#### Give reasons for:

- A static book on a table has energy.
- When the apple falls from the tree, its kinetic energy increases
- The ball moves when you kick it.

#### What happens if:

- (I) A basketball is thrown up (concerning the potential energy)?
- **A book falls from** a table (concerning the potential energy)?
- You kick a ball (concerning the kinetic energy)?
- A book is placed on a higher shelf (concerning the potential energy)?

# Lessein 3

#### Forms of Kinetic and Potential Energy

All forms of energy can be classified into potential or kinetic energies.

• كل صور الطاقة يمكن تصنيفها إلى طاقة وضع أو طاقة حركة.



#### Forms of kinetic energy:



#### Sound energy



 Movement of sound waves in the air

انتقال موجات الصوت في الهواء

#### Light energy



 Movement of light waves in the air

انتقال موجات الضوء في الهواء



#### Electrical energy



 Movement of electricity in the wires

الكهرباء تسرى داخل الأسلاك



#### Heat energy



 Vibration of water particles during boiling

• اهتزاز جزيئات المياه عند غليانها

#### Kinetic energy depends on:

1 The speed of the body.

2 The mass of the body.

• تعتمد طاقة الحركة على سرعة الجسم وكتلته.



#### Forms of potential energy:

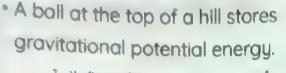
Gravitational potential energy

2 Chemical potential energy



 A battery stores chemical potential energy.

البطارية تخزن بداخلها طاقة وضع كيميائية.



• الكرة أعلى التل تغزن بداخلها طاقة وضع الجاذبية.





• The chemical energy stored in a battery isn't used until the battery is connected to any device.

والزنبرك يخزن بداخله طاقة وضع

. لا تُستخدم الطاقة الكيميائية المُخزنة داخل البطارية إلا عند توصيل البطارية بأحد الأجهزة.

#### Potential energy depends on:

1. The height of the body.

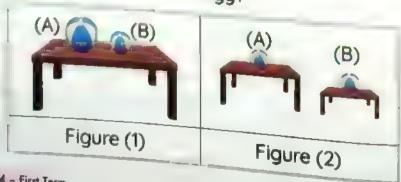
2 The mass of the body.

وننفد طاقة الوضع على ارتفاع الجسم وكتلته.

#### Check your understanding?



>> Which ball has more potential energy?







## Activity 7 Types of Energy

» Energy is found everywhere around us.

All forms of energy are classified into potential or kinetic energy.





Changed (transformed) from one form to another. Transferred from an object to another.

#### **Energy Transformations**







Energy Produced



Flashlight (Torch)



Chemical energy (Stored in a battery)

Light energy Thermal energy



Gas oven



Chemical energy (Stored in natural gas)

Thermal energy



Spring toy car



Potential energy

Kinetic energy

Real Car



Chemical energy (Stored in gasoline)

Kinetic energy Thermal energy Sound energy

## Die per menument

Tool	Energy Used	Energy Produced
1 Electric lamp		
2 Radio		
3 TV		
4 Electric fan		
5 Hand bell		
6 Electric bell		
7 Roller coaster		
8 Washing machine		

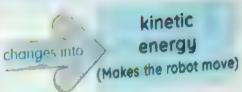


Easy Life Tool

Robot (With Batteries)

Chemical energy (Stored in a battery)





>> Robots were invented to make tasks easier:

#### For example:

- The robot is powered by batteries.
- 2 Chemical energy stored in batteries is converted into electrical energy.
- 3 Electerical energy is converted into kinetic energy when the robot's hand move to open the bottle.
  - ال يستمد الرويوت طاقته من البطاريات.
  - 2] تتحول الطاقة الكيميائية المختزنة في البطارية إلى طاقة كهربية.
  - 3 تتحول الطاقة الكهربية إل طاقة حركية في يد الروبوت لفتح غطاء الزجاجة.



Energy is neither created nor destroyed, but it can be converted from one form to another.

الطاقة لا تفنى أو تستحدث من العدم، ولكن يمكن تحويلها من صورة لأخرى.

#### **UACTIVITY**



#### 9 Record Evidence Like a Scientist Roller Coaster





- >> Now that you have learned more about energy, motion, potential energy, kinetic energy and the different energy transformations.
- >> Try to think like a scientist by writing your claim, your evidence and your scientific explanation about what you have learned.



#### Question:

>>> How do moving objects get energy?



#### My Claim:





Scientific Explanation with Reasoning:

# Exercises on Lessons 3 and 4

	Ch	oose the corr	ect answer:		
11	W	hich of the follow	wing can store e	nerau?	
3	d	. Batteries	b. Wires	c. Plastic	d Rubber
12	C	hemical energy	stored in food is	Considered a fa	orm of
128 T		nergy.		00/10/00/100 0 10	
b	(	a. potential	b. kinetic	c. heat	d.light
)	3 7	The potential ene	ergy of an object		
			b. its height from		rface only
			ts height from th		
١		d. its temperatu			
	4	Chemical energ	y can be stored i	n	
		a. food only		b. batteries d	only
		c. televisions ar	nd food	d. food and	batteries
	5	All the following	release sound e	nergy, except th	
		a. door bell	b. radio	c. flashlight	d. loudspeakers
	6	A toy car store	s energy	at the top of rar	
		a. kinetic	b. chemical	c. thermal	d. potential
	1	7 energy	, is stored in the c		
	ŀ	a. Kinetic	b. Chemical	c. Potential	d. Thermal
	1	_	perated by battern		. potential energy in it. d. thermal
	1		al b. chemical	c. sound	
				c. height	otential energies.  d. a and b
ı		a. speed	b. mass chemical energy i	_	
			b. clock	c. flashligh	
		a. gas oven			ater is considered
			otential energy		al kinetic energy
			potential energy	d. therma	l kinetic energy

Energy	and M	lotion	) ( _
An apple on the ground stores chemical potential energy.		(	) 1
ralling objects have both kinetic and potential energies.		(	)
A static object on the ramp has potential energy only.		(	)   (
ac an object's height increases, Its kinetic energy increases	<b>5</b> .	(	)
When an object slides down a ramp, its potential energy d	ecrea	ses	
A.			)
The movement of electricity in wires is considered a form	m of I	kine	tic
energy.		(	)
All forms of energy can be classified into two types.		(	)
Energy is neither destroyed nor created from nothing.		(	)
Energy can't be transferred from one object to another.		(	)
No.			
Correct the underlined words:	into ti	hern	nal
A fan turns the chemical energy stored in natural gas			
energy.  2 When an apple falls from a tree, it gains potential energy.			
3 Chemical energy and light energy transfer in the air in the	form	of	
			į
waves.  A compressed spring stores chemical energy.			
Complete the following sentences using the work	ds be	etwe	een
the brackets:  (decreases - potential - gravitational - kinetic - chen	nical -		}
(decreases - potential - gravitational speed - increases)			
1 The energy which is stored in a ball at the top of a hill is	р	oter	ntial
energy.			
2 When an object moves down, its kinetic energy	as its		
increases	h al ! 4		
3) When a boy moves down a slide, energy is convert	ted int	0	
energy.			



#### Write the scientific term:

- It's the energy stored in the object due to its position.
- It's the energy an object gains due to its motion.
- It's the energy stored in a compressed spring.
- lt's a form of kinetic energy that transfers through wires.
- It's a form of kinetic energy that can be seen by the eyes.
- lt's a form of kinetic energy that can be heard by the ears.
- It's a form of potential energy that pulls the object towards Earth's center.
- It's the produced energy from a battery.
- lt's a device that changes electrical energy into sound energy.



## Choose from column (A) what suits it in column (B):

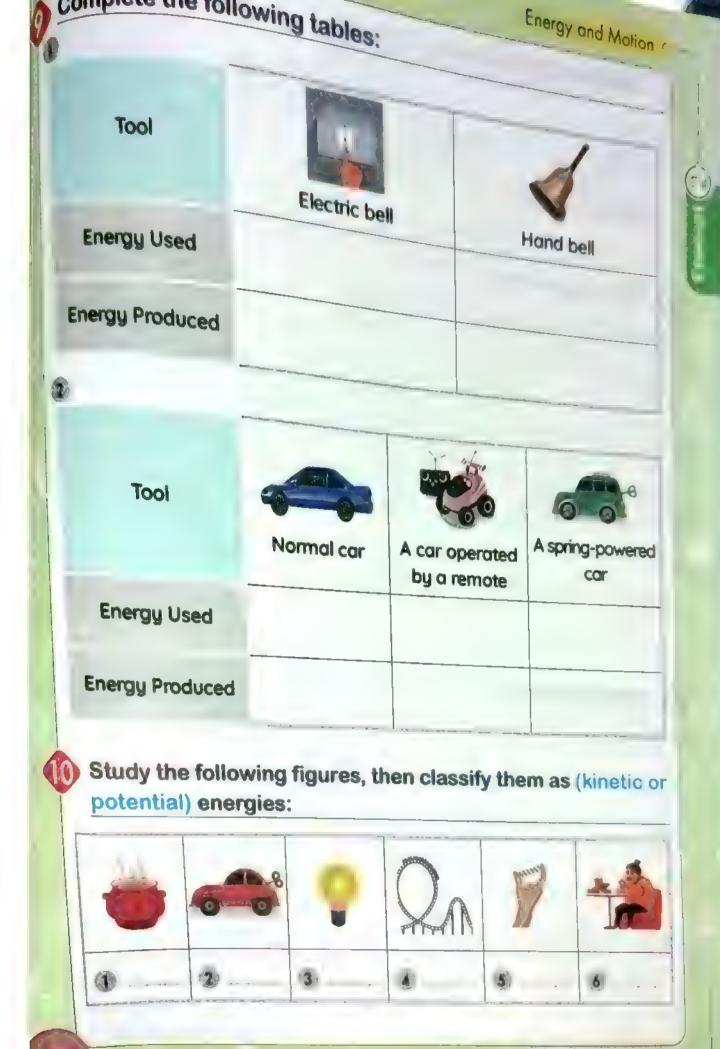
- 1 An object's mass
- 2 An object's speed
- 3 An object's height
- 4 An object's color

#### Column (B)

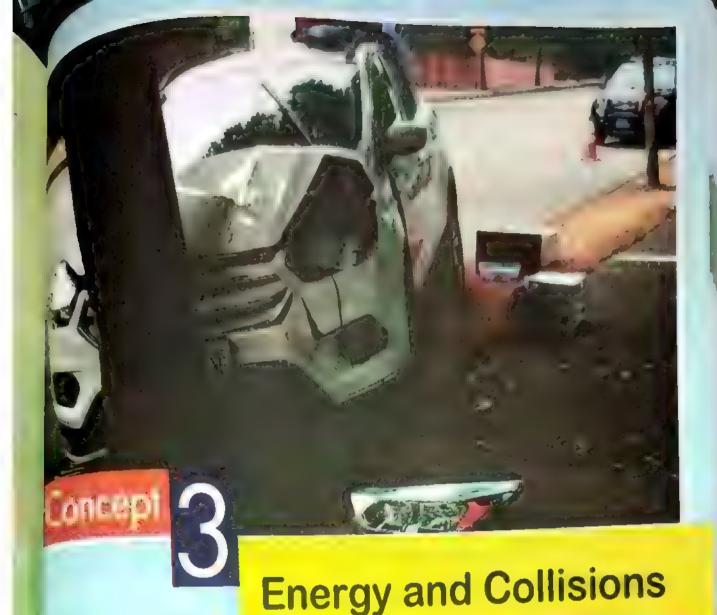
- a. is a factor that affects the object's potential energy only.
- b. is a factor that affects the object's potential and kinetic energies.
- c. doesn't affect either the potential or the kinetic energies of an object.
- d. When it increases, the object's kinetic energy increases.

## Cross out the odd word:

- Vegetables Normal car Electric heater Gas oven
- Electric lamp TV Radio Flashlight



Motion
Complete the following diagram:
Q. review
energy (Stored in the batteries of a robot)  energy (Moves in wires)  energy (Makes the robot move)
Give reasons for:
Electrical energy is considered a form of kinetic energy.
and the state of t
2 A TV produces different kinds of energy.
in a series of the regg.
3 You feel warm when you rub your hands together.
godi Harias together.
What happens if:
You operate an electric lamp?
2 You operate an electric fan?
3 You turn on a flashlight?
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#### Cantept Objectives:

#### By the end of this concept, students will learn about:

- 1 Collision.
- Examples of collision:
  - a. Wrecking ball b. Cricket
- Safety equipment during collision
  - 1. Seatbelt
- b. Airbag
- Basics of speed.
- ▶ How to measure an object's speed.
- ▶ Comparing the speed of different objects.
- ▶ The relationship between speed and kinetic energy.
- ▶ The effect of mass, speed or force on collision.
- Sliding on an inclined ramp.
- Energy conservation in Newton's cradle.

#### Key Yecabulary

- Collision
- Speed
- Mass

# Concept 3

## **Energy and Collisions**

#### Lesson 1

Lameston 7

LIMINGTA

Activity 1 Can you Explain?

Activity 2 Collision

Activity 3 Watching Objects Collide

Activity 4 Basics of Speed

Activity 5 Racing Downhill

Activity 6 Energy and Collision

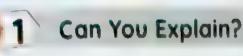
Activity 7 The Effect of Speed on Collision

Activity 8 Speed and Collision

Activity 9 The Effect of Mass on Collision

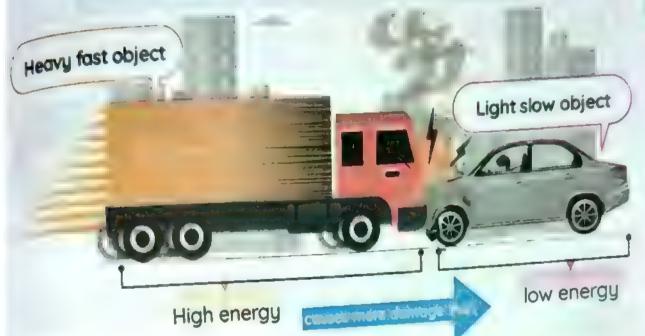
Activity 10 Energy Conservation During Collision

Energy and Collisions o



What happens to objects when they collide





- » A following object has more energy than a slow moving object.
- A object has more energy than a tobject.
- >> An object with a cre energy will cause more damage than an object with less energy.

#### Example of collision:

#### Wrecking Ball

- · It is a very heavy steel ball that swings on a cable.
- It is used by construction workers to knock down walls or parts of buildings.

كرة الهدم:

- مي كرة فولاذية ثقيلة معلقة بكابل.
- تساعد عمال البناء على تكسير الحوائط أو أجزاء من المباني.



#### Activity



Collision

#### Collision in Cricket

- >>> Cricket is a popular game all over the world.
- >> The player holds a wooden but to hit the ball.
- >> When the player hits the ball:
  - Kinetic energy transfers from the but to the ball
  - The speed of the ball increases.
  - The ball returns in a different direction.
  - Collision always makes a popping sount.



- لهدة الكريكيت هي لعبة معروفة حول العالم.
- ، يُمسك اللاعب بمضرب خشبي لضرب الكرة.
  - عندما يضرب اللاعب الكرة:
- سوف تنتقل الطاقة الحركية من المضرب إلى الكرة.
  - تزداد سرعة الكرة وتعود الكرة في اتجاه مختلف،
    - بنتج عن الاصطدام دائمًا صوت.

#### Check your understanding?



- Study the following figure, then put (√) or (∴):
  - Energy transfers from the ball to the player's foot.
  - 2 The ball gains potential energy.
  - The direction of the ball changes.
  - The speed of the ball decreases.



A Mar Kiks the pall.

# Activity 3 Watching Objects Collide

, hat happens when a car stops suddenly?

. The driver's body continues to move forward. Because moving objects stay in motion until something stops them.



- يستمر جسم السائق في التحرك للأمام.

- حيث تظل الأجسام المتحركة في حالة حركة حتى يوقفها شيء ما.



Safety Equipment During Collision

معدات السلامة أثناء التصادم



#### Seatbelt

حزام الأمان

It's used in cars to keep the driver and the passengers from moving during a collision (when the car stops suddenly).

يُستخدم لمنع جسم السائق والركاب من التصرك للأمام وقت التصادم.







الوسادة الهوائية

Material

· It is made of a It in the material.

Location

It is folded into the worm where, are the area, seats or .

تُصنع الوسادة الهوائية من النايلون الخفيف.

يُطوى داخل عجلة القيادة أو لوحة التابلوه أو المقاعد أو الأبواب.

#### Idea

#### During collision:

 The airbag inflates automatically. Because the sensors of the car detect a crash.

#### After collision:

 The airbag deflates as fast as it inflates. Because it has holes and vents that allow the gas to come out of the airbag, so the driver can get out of the car.

. تنتفخ الوسادة الهوائية تلقائيًا بواسطة مستشعرات السيارة عند حدوث التصادم.

. تنكمش الوسادة الهوائية بنفس سرعة انتفاخها لوجود ثقوب وفتحات بها؛ حتى تسمح للشخص بالخروج من السيارة،

#### **Importance**

- It slows the speed of the driver or passenger when his/her body moves forward.
- It absorbs the energy of the car during collision.

تخفض سرعة حركة الجسم للأمام أثناء التصادم.

، امتصاص طاقة السيارة أثناء التصادم،



They tell the airbag to inflate and fill it with gas to provide a soft cushion.

تمبر المستشعرات الوسادة الهوائية بالانتفاخ وتعبئتها بالغاز لتوفير وسادة ناعمة.



#### Collisions between Trains and Cars



- Every year, there are many accidents in which a hits a car that may be stuck on the train tracks.
- Trains are much lurger than cars and they can travel at a night speed.
- The higher the force when objects collide, the more angerous it will be during collision.
  - ، تحدث العديد من حوادث تصادم القطارات بالسيارات التي تعلق في قضبانه كل عام.
    - إن القطارات أكبر حجمًا من السيارات، ويمكنها السفر بمعدل عالٍ من السرعة.
      - . كلما زادت قوة التصادم، زادت المخاطر أثناء التصادم.

• Car airbags cannot protect people in severe collisions with trains. لا يمكن للوسائد الهوائية في السيارات حماية الأشخاص عند التصادم الشديد مع القطارات.





# Exercises on Lesson 1

Choose the c	orrect answer:		
	ll is made up of	u— , u—	
a. nylon		c. iron	d. steel
2 A obje	ct has the least kin		<b>4.</b> 3(CC)
a. fast-movino	and light		ving and heavy
c. fast-moving	and heavu		ving and light
A moving	has no engine.	<b>G.</b> 510 W 1110 V	and light
a. truck	<b>b</b> . motorbike	<b>c.</b> bike	d one
Mhen the wred	cking ball hits a bu		d. car
a. kinetic ener	gy transfers from	the building	AL - I II
b. kinetic ener	gy transfers from	the bollaing to	the pall
c. sound energ	gy transfers from t	he ball to the t	building
d. thermal end	ergy transfers from	d ent of floa ent	uliding
5 When Sarah hi	ts a tennis ball by a	the ball to the	
a. speed	<b>b.</b> direction		
*		<b>C.</b> mass	d. a and b
In cricket, when Adam hits the ball,  a. the ball moves in the same direction			
b. the ball spe	ed decreases	ection	
c. the kinetic e	nergy is transferre	id from the best	
d. part of the I	kinetic energy is co	nverted into	to the bat
7 When the drive	er stops suddenly,	all the pass	ound energy
a. upward	<b>b.</b> forward	c backward	ers will move .  d. downward
8 The airbag infl	ates collision	e. buckwara	d. downward es fast collisior
a. before – aft	er	b during b	es tast collision
c. before - dui	ring	<ul><li>b. during - b</li><li>d. during - a</li></ul>	ftor
9 The tell t	the airbag to inflate	and fill with age t	o provide a soft cushio
d. Di Gines	D. 26112012	C. gas pedale	d cooods -
io The . slo	ows the speed of	the driver when	his/her body move
forward.		***************************************	This/Their body move
a. steering wh	eel <b>b.</b> seatbelt	c. airbag	d. sensor

They are found in airbags, and through which gas comes out to let

them deflate.



## Complete the following sentences using the words between the brackets:

C	V	1	
	Ì		
E	È		
	,		

(nylon - steel - same -	opposite -	more -	less - plastic
-------------------------	------------	--------	----------------

- 1 Light objects cause damage than heavy objects.
- 2 Fast objects cause damage than slow objects.
- 3 When the player hits the ball, It moves in the .... direction.
- 4 The airbag is made of , but the wrecking ball is made of

## 0

## Complete the following sentences from the words between the brackets:

	the brackets:
1	energy is usually produced due to collision. (Cremica - Cours
2	When hitting a ball with a cricket bat, energy transfers from
	the bat to the ball. (potential - kinetic)
3	In a collision, a truck causes more damage than a (car - tran
4	Airbags are filled with during crashes. (1.qu.a gas
5	The absorbs the car's energy during collision.
	(seatbelt – airbag)
6	The seatbelt prevents passengers from moving forward when the car
	stops (gradually - suddenly)
7	Airbags have vents that help them after collision.
•	(inflate - deflate)
8	Airbags inflate during crashes. (manually actimatically)
9	The slows down the driver's speed during a car crash.
10	(airbag - seatbelt)
	Airbags deflate after collision.
11	When objects crash, " transfers between them.
10	(distance - energy)
12	As a result of hitting a ball with a bat, the of the ball will shape
12	change. (direction mass)  Fast-moving objects cause danger than slow-moving objects
J	Fast-moving objects cause danger than slow-moving objects.

(less - more)

of the car during collision. (energy - motion)

14 Airbags absorb the .

## cross out the odd word:

- Car Blke Train Truck
- pashboard Steering wheel Tires Car doors

## Choose from column (A) what suits it in both column (A) &

#### Column (A)

- A moving car
- 2 A static truck
- 3 A moving bike

#### Column (B)

- a, has no kinetic energy.
- b. has the highest kinetic energy.
- c, has the lowest kinetic energy.

#### Column (C)

- n has the smallest mass.
- b has no speed.
- c has the highest speed.

## Choose from column (A) what suits it in column (B):

#### Column (A)

- 1 Wrecking balls
- 2 Airbags
- 3 Sensors
- 4 Vents

#### Column (B)

- a may exit in the car's dashboard, steering wheel and doors.
- h allow the airbags to deflate after collision.
- c are used to knock down old buildings.
- d detect a car crash and tell the airbag to inflate.

## 0

## Study the following figures, then answer the questions below:

1 The following figures represent different moving objects.









A moving bike

A moving train

A moving car

A moving motorbike

- a. Which vehicle has the biggest mass?
- b Which vehicle consumes the least amount of fuel?
- c. Which vehicle doesn't consume any fuel?

d. Do you think that they have the same kind of energy? Explain your answer.

#### 2 From the opposite figure:

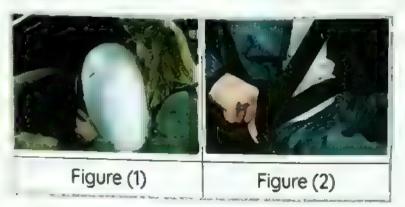
a. Which object has the lowest energy and why?



b. Which object causes more damage?

- 3 The following figure represents a boy playing a cricket game, complete:
  - a. The boy uses a . . . to hit the ball.
  - b. The energy transfers from the \_\_\_\_\_ to the
  - c. The speed of the ball \_\_\_\_\_ in the \_\_\_\_ direction.





Mention the safety equipment in the car.

- Figure (1) represents a/an
- Figure (2) represents a/an

## (ive

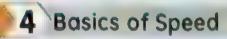
#### Give reasons for:

- 1 During a collision, a truck causes more damage than a car.
- 2 During a collision, a fast-moving car causes more damage than a slow-moving car.
- 3 Seatbelts and airbags are from the most important safety means in cars.
- 4 Airbags inflate during a collision. 5, Airbags deflate after a collision.

#### What happens if:

- 1 A truck collides with a car?
- 2 The player hits the tennis ball with the bat?





#### **Basics of Speed**

- >> Speed is a physical measurement that indicates how fast objects move
- The direction of the moving object doesn't affect the speed
  - و السرعة كمية فيزيائية تُعبر عن مدى سرعة الجسم.
    - اتجاه المركة لا يؤثر على قيمة السرعة.



If a runner moves 5 meters forward in one second and then returns 5 meters backward in one second, his speed remains constant



Speed

It is the distance traveled per a unit of time.

السرعة: هي السافة المقطوعة خلال وحدة الزمن.

## How to Measure an Object's Speed

We can calculate the object's speed using the following rule:

Speed = Distance + Time



is measured by

kilometer per hour (km/hr) or (Kph)

or

meter per second • (m/sec)

#### **Problems**



#### Problem 1:

Calculate the speed of a runner who runs 240 m in 60 seconds.

Speed = 
$$\frac{\text{Distance}}{\text{Time}} = \frac{240}{60} = 4 \text{ m/sec.}$$



#### Problem 2:

If Kenzy rides a bike and covers 150 m in 15 seconds to reach the supermarket, calculate the speed of the bike.

#### Problem 3:

>>> From the following figures, which car is faster?

## The gray car moves 50 meters in 2 seconds.



#### solution:

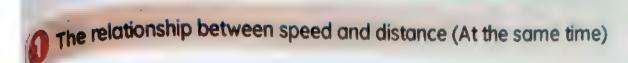
#### The white car moves

60 meters in 2 seconds.



#### Solution:

## Comparing the Speed of One Body to Another





The car covers 500 meters in 5 seconds.



The runner covers 50 meters in 5 seconds

• Car's speed = 
$$\frac{500}{5}$$
 = 100 m/sec.

• Runner's speed = 
$$\frac{50}{5}$$
 = 10 m/sec.

• The car has a higher speed because it covers a longer corresponding the same time.



The relationship between speed and time (At the same distance)



A turtle covers 50 meters in 100 seconds



A cheetah covers 50 meters in 5 seconds.

• Cheetah's speed = 
$$\frac{50}{5}$$
 = 10 m/sec.

• Turtle's speed = 
$$\frac{50}{100}$$
 = 0.5 m/sec.

 The cheetah has a higher speed because the cheetah covers the same distance in a shorter time,

#### The speed of moving objects depends on:

- The distance covered by the object.
- The time taken to cover this distance.

#### To compare the speed of two moving objects:

- The object that covers a longer distance in the same tane has a higher speed.
- The object that covers the same distance in a shorter time has a higher speed.

الجسم الذي يقطع أكبر مسافة في نفس الزمن هو الجسم الأسرع.
 الجسم الذي يقطع نفس المسافة في زمن أقل هو الجسم الأسرع.

#### As distance increases



**Speed increases** 

As time increases



Speed decreases

#### Which object moves faster?

1	The 1st runner travels 6 kilometers in 1 hour.	
	The 2 <sup>nd</sup> runner travels 9 kilometers in 1 hour.	

The 1st car travels 1,000 meters in 5 seconds.

The 2nd car travels 1,000 meters in 8 seconds.

張

## Activity 5

#### Racing Downhill

#### Experiment

To show the relationship between speed and kinetic energy

## Tools

1000				Lo		\
Toy	Cardboard	Four	Paper	Scissors	Stopwatch	Ruler
trucks		books	cup			

## Part \* Measuring speed

- 1 Set up an inclined ramp using two books and a cardboard as shown.
- 2 Roll the toy truck down the cardboard tube.
- 3 Record the time that the toy truck takes to reach the end of the tube using a stopwatch.
- 4 Repeat the previous steps by using three books, then four books.
- 5 Record your results in the table.





## Measuring kinetic energy

- 1 Cut a hole in the side of the cardboard large enough to allow the truck to enter without hitting any of its edges.
- 2 Put the paper cup at the end of the cardboard tube.
- 3 Roll the toy truck down the tube.
- 4 Measure the distance that the paper cup moves by using a ruler.
- 5 Repeat the previous steps by using three books, then four books.











#### -o Motion

#### Observations:

Number of Bart	Part (1)	Part (2)	
Number of Books	Time (toy truck takes)	Distance (cup travels)	
2 books	4 seconds	2 cm	
3 books	2 seconds	4 cm	
4 books	1 second	6 cm	

- As the angle of inclination increases
  - The speed of the truck Increases.
  - The kinetic energy of the truck increases.

#### Conclusion

>>> Both of speed and kinetic energy increase by increasing the angle of inclination.



- Study the following figure, then choose the correct answer:
  - By increasing the number of books, the car covers a

(longer distance - shorter distance)



By decreasing the number of books, the car's speed

(increases - decreases)



# Exercises on Lesson 2

#### Choose the correct answer:

Choose are content of	
A moving object's speed depends	on the .
a. distance b time	c direction d a and b
Which is the fastest object from the	e following?
a. A car that moves a long distance	e in a long time
b. A car that moves a long distant	te in a short time
c A car that moves a short distan-	ce in a long time
d. A car that moves a short distan	ce in a short time
.3 Which is the fastest object from th	e following?
a Car (A) covers 100 meters in or	ne second.
b Car (B) covers 200 meters in tv	
c. Car (C) covers 100 meters in tw	
a Car (D) covers 200 meters in a	one second.
The speed of a car that travels 20	00 meters in 2 seconds is m/s.
	c. 100 d. 200
5 How can we calculate the speed	of an object?
a. Speed = Distance ÷ Time	b. Speed = Distance + Time
Speed = Distance x Time	d. Speed = Distance - Time
6 The measuring unit of the distant	ce is
a. km/s b. km	c. seconds d. kg
7 The speed of an object is measu	ired in . or meters per second.
a kilometers per hour	grams per second
c. hours per kilometer	d kilometers per kilogram
The result of dividing the distance	te traveled by time equals
a the energy the force	c the mass the speed

Which of the	following is a mea	suring unit of spe	eed?
a. hr/km	b. sec/m	c. kg/sec	d. m/sec
Minetic energy	y isn't affected by	the object's	
a. mass	b. speed	c. color	d. weight
During a colli	sion between	, the force of t	the collision increases
and the risks	increase.		
a. a bicycle a	nd a car	b. two cars	
c. a train and	a car	d. two trains	
		th the same speed	d, which object has the
	energy?		
a. Car	b. Bike	c. Truck	d. Motorbike
Put (/) or (x	):		
All objects are	ound us move with	the same speed	. ( )
			( )
The speed of	a truck decreases	when it takes a lo	onger time to cover
the same dist	ance.		( )
If a car covere	ed a distance of 10	m in a time of 2	seconds, the speed
of the car is 5	m/sec.		( )
The speed of	the car that cover	s 75 meters in 3 se	econds is 25 km/hr.
			( )
		car (A) covers a lo	onger distance than
			( )
	ed moving objects	face less danger	than the slower
			( )
As the speed	of the car increase	es, the amount of	fuel used decreases.
			( )
	a. hr/km  Kinetic energy a. mass  During a collist and the risks it a. a bicycle a c. a train and If the following highest kinetic a. Car  Put (/) or (X)  All objects are The speed is to taken to cove The speed of the same distribute same distribute If a car covere of the car is 5  The speed of	<ul> <li>a. hr/km</li> <li>b. sec/m</li> <li>Kinetic energy Isn't affected by a. mass</li> <li>b. speed</li> <li>During a collision between and the risks increase.</li> <li>a. a bicycle and a car</li> <li>c. a train and a car</li> <li>If the following objects move with highest kinetic energy?</li> <li>a. Car</li> <li>b. Bike</li> <li>Put (/) or (x):</li> <li>All objects around us move with the speed is the distance cover taken to cover it.</li> <li>The speed of a truck decreases the same distance.</li> <li>If a car covered a distance of 10 of the car is 5 m/sec.</li> <li>The speed of the car that cover</li> <li>Car (A) is faster than car (B) if a car (B) at the same time.</li> <li>The high-speed moving objects objects</li> </ul>	<ul> <li>10 Kinetic energy Isn't affected by the object's a. mass b. speed c. color</li> <li>11 During a collision between and the risks increase. a. a bicycle and a car c. a train and a car d. two trains</li> <li>12 If the following objects move with the same speed highest kinetic energy? a. Car b. Bike c. Truck</li> <li>1 Put (✓) or (✗): a. All objects around us move with the same speed taken to cover it. b. The speed is the distance covered by the object taken to cover it. a. The speed of a truck decreases when it takes a left the same distance. a. If a car covered a distance of 10 m in a time of 2 of the car is 5 m/sec. b. The speed of the car that covers 75 meters in 3 s. b. Car (A) is faster than car (B) if car (A) covers a locar (B) at the same time. b. The high-speed moving objects face less danger</li> </ul>

## Correct the underlined words:

- speed = Distance x Time
  - As the height of the ramp decreases, the object reaches the ground faster.
  - If two cars cover different distances at the same time, they have similar speeds.

#### Write the scientific term:

- It is the distance covered by a moving object in a unit of time.
- It's a measurement of whether an object moves fast or slowly.
- It's the measuring unit of the time taken by an object to cover a distance

### Complete the following sentences from the words between the brackets:

- (distance speed) M Km/hr is a measuring unit of \_\_\_\_\_.
- If an object covers 6 meters in two seconds, its speed is \_\_\_\_

(3 km/hr - 3 m/s)

3 A bike that covers 100 meters in 10 seconds is . . . . than another

bike that covers 150 meters in 30 seconds.

A horse is faster than a human as it covers a same time.

Speed is a \_\_\_\_ quantity. Fast objects cause danger than slow objects.

(faster - slower) distance at the (longer - shorter)

(physical - chemical)

(less - more)

#### Complete the following sentences using the words between the brackets:

#### (decreases - increases - less - higher)

- By increasing the speed of a car, its kinetic energy
- A slow-moving object exerts force when it collides with a fast-moving one.
- A car's speed on an inclined ramp is .... than that on a flat road.

Cross out the ode	d word:
Distance - Time - S	Speed - Direction
Meter - Kg - Km	
Meter - Hour - Sec	ond
	the it is to the second U.S.
Choose from	what suits it in
_	Column (B)
Column (A)	u. when an object covers a longer distance in
The speed	the arms time
becomes zero	b. when an object covers the same distance
2 The speed	in a longer time.
increases	c. when an object covers the same distance
The speed	in the same time.
decreases	d. when an object stops moving.
The speed remains constant	
Terrums constant	
——————————————————————————————————————	page de constantação de los do 10 tiendo
Which object mo	ves faster?
Car (A) travels a k	onger distance in the same time.
	Laster distance in the agency time
Car (B) travels a s	shorter distance in the same time.
	e same distance in a longer time.
Car (A) travale the	some distance in a longer lime.
Car (A) travels the	
	e same distance in a shorter time.

## study the following table, then complete:

	Car (A)	Car(B)	Car(C)	Car (D)
pistance (Meters)	200	200	100	100
Time (Seconds)	4	2	2	5



- in Car ( ) is the fastest one while car ( ) is the slowest one.
- 2 Car ( ) nas the lowest kinet c energy.
- 3 Cars ( ) and ( ) move with the same speed.

## Study the following figures, then answer the questions below:

1 Choose the correct words for the following sentences:

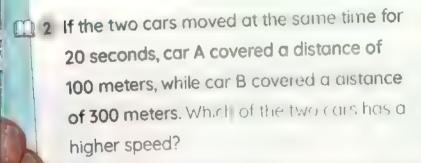
(faster - slower - increases - decreases - remains constant)

a. By using two books only instead of three books,

the ball moves and its kinetic energy

b. By using for books instead of three books,

the ball moves \_\_\_ and its kinetic energy



000	0
Car A	Car B

- Motion
Problems:
Find the speed of a runner If you know that he covers 40 meters In 8 seconds.
A train travels from Cairo to Alexandria a distance of 200 kilometers in 2 hours. Find its speed.
Give reasons for:  An object's speed indicates how fast the object moves.
Different kinds of energies exist during a collision.
Driving fast is so dangerous.
What happens if:  An object covers longer distance in the same time?
An object covers the same distance in a longer time?
The angle of the inclined ramp decreases  (according to the kinetic energy of the object sliding on it)?





#### 6 Energy and Collision

Collision

It is the moment when two moving objects crash.
التصادم: هو لحظة اصطدام جسمان متمركان معًا.

#### When two cars collide,

an energy transfer occurs.

يحدث انتقال للطاقة.

changes of energy occur.

يحدث تحولات للطاقة.

#### Example

- What happens if a boy runs fast and hits a traffic sign?
  - The boy stops moving forward.
  - The boy may get injured.
  - The traffic sign may vibrate (wobble).
    - بتوقف الولد عن الحركة للأمام قد يتعرض للإصابة قد تهتز إشارة المرور.

## From the previous example, we conclude that:

- · Kinetic energy transfers from the boy to the traffic sign, so it vibrates.
- Some of the kinetic energy changes to sound and heat energies during collision.

#### من المثال السابق نستنتج أن:

- تنتقل الطاقة الحركية من الولد إإشارة المرور فتهتز إشارة المرور.
- منحول جزء من الطاقة الحركية إلى طاقة صوتية وحرارية أثناء التصادم.

## Activity 7 The Effect of Speed on Collision

- >> The kinetic energy of an object depends on:
- Object's mass. 2 Object's speed.
- The force exerted in an accident depends on the ... and the direction of the two cars.

## Effects of speed on collisions:

As an object's speed increases, its kinetic energy

. كلما زادت سرعة الجسم زادت طاقته الحركية.

## Fast-Moving Objects

#### Energy

They have more energy.

• They have energy,

#### **During a Collision**

- They exert more force, which causes a big darnage that cannot be repaired.
  - ه الأجسام السريعة تمثلك طاقة أكبر.
  - عند التصادم تكون قوتها أكبر،
     وتسبب ضررًا أكبر لا يمكن إصلاحه.
- They exert whice, which causes a which causes a that can be repaired.
  - و الأجسام البطيئة تمتلك طاقة أقل.
  - عند التصادم تكون قوتها أصغر،
     وتسبب ضررًا أصغر يمكن إصلاحه.



Driving fast is very dangerous.

القيادة السريعة خطيرة جدًا.



## 2

#### Effects of direction on collisions:





- >> When a fast object hits another slow object:
  - Kinetic energy transfers from the fast car to the slow car.
  - Some of the extra energy is transferred in the form of heat, light, or sound energy.

عندما يصطدم جسم سريع بآخر:

تنتقل طاقة الحركة للجسم الآخر، وتتحول بعض الطاقة الزائدة إلى طاقة حرارية أو ضوئية أو صوتية.

When hitting the rubber ball with the bat, we can observe that a fast-moving ball makes a louder sound than a slow-moving ball.

عند هبرب الكرة المطاطية بالمضرب، يمكننا ملاحظة أن الكرة السريعة تُصدر صوتًا أعلى من الكرة البطيئة.





# Exercises on Lesson 3

	Choose the correct answer:			
10	energy is transferred bet	ween two object	ts during a col	lision.
	a. Potential b. Thermal	c. Electrical	d. Kinetic	
4	All these kinds of energy exist du	ring a collision, e	except	energy
	a. sound b. thermal	c. electrical	d. chemical	
6	A collision between moving obje	cts always produ	uces ei	nergy,
]		c. electrical		
. 3	During a collision, all the following	g happen, excep	ot .	
1	a. energy transfer	b. energy cho	inges	
.5	c. energy is destroyed	d. damage to		
1 (3	When a fast runner collides with except that	a traffic sign, all	the following r	nappen
	a. potential energy is produced	b. sound is er	nergy is produ	ced
	c, the boy stops	d. the traffic s		
	By increasing the speed of movir	-		se(s).
1	a. kinetic energy	b. exerted for		
	c. resulted damage	d. all the prev		
-	Which accident causes great dar		be repaired?	
	a. Two slow cars collide in oppos			
	b. Two fast cars collide in the sar			
	<ul> <li>c. Two slow cars collide in the said.</li> <li>d. Two fast cars collide in opposition</li> </ul>			
0	The effect of a collision depends		na factors evo	ent the
1	of the moving object.	orrain the rollowin	ig idetors, exc	ept the
	a. direction b. speed	c. color	d. mass	
	Put (✓) or (×):			
10	A collision between moving object	cts produces kind	etic energu.	( )
0	The effect of collision depends or	·		ects
	only.			( )
6	A fast-moving rubber ball makes	a louder sound	than a slow-m	ovina
	one when hit by a bat.			( )
	The driver should drive as fast as	possible to avoid	anu accidents	( )
			and accidents	

### Correct the underlined words:

- During a collision, a part of the potential energy is converted into sound energy.
- By increasing the object's speed, it exerts less force during a collision.
- The object's potential energy depends on its speed and mass.

#### Write the scientific term:

- The process in which two or more objects crash into each other, causing an energy transfer.
- The factor that affects both the potential and kinetic energy of an object.

## Complete the following sentences from the words between the brackets:

- A severe crash occurs when two cars are moving in the .... direction. (same - opposite)
- 2 During the collision of two objects, the kinetic energy transfers from (faster - slower) object to the other one.

## Study the following figures, then answer the questions below:

The following figures represent different collision situations, complete the following using these words:

(sound - car - bike - truck - traffic lights)



- a. In figure (1), kinetic energy transfers from the \_\_\_\_\_ to the
- b. In figure (2), the \_\_\_\_ causes more damage.
- c. In figure (3), the \_\_\_\_ is exposed to more damage.
- d. A collision usually produces .....
- Which figure represents more severe damage and why?



#### What happens if:

- Two cars moving in the same direction crash?
- 2) Two cars moving in different directions crash?

## esson

#### **Speed and Collision**

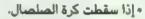
By increasing the force on an object, its speed increases, and its kinetic energy increases.

#### Activitu

To Show the Effect of Force and Speed of a Moving Object on Its Kinetic Energy

#### **Steps**

#### If you drop a regular shaped clay ball from your hand towards the floor.



#### **Observations**

 the shape of the ball changes slightly,

منتفير شكل الكرة قليلًا.

If the clay ball is thrown pity,

عند رمى كرة الصلصال برفق.



 the shape of the ball changes more.

• يتغير شكل الكرة يصورة أكبر.

If the clay ball is thrown strongly,

عند رمى كرة الصلصال بقوة.



• the shape of the ball changes much m

• يتغير شكل الكرة بصورة أكبر جدًّا.

**Conclusions** As the force applied to an object increases, the speed and kinetic energy increase during collision, and more damage will happen to this object.

مع زيادة القوة المؤثرة على الجسم التحرك

تزداد سرعة الجسم المتحرك وتزداد الطاقة الحركية له أثناء الاصطدام

وبالتالي سيحدث المزيد من الضرر لهذا الجسم،

## Activity 9

#### 9 The Effect of Mass on Collision

The Relationship Between the Mass of the Objects and Their Kinetic Energy



THE PARTY

has a big mass.

has a big engine.

consumes more fuel.

has high kinetic energy.

causes more damage during a collision.



has a small mass.

has a small engine.

consumes less fuel.

has low kinetic energy.

causes less damage during a collision.

### Give a reason for...



Tre trutters and ager engine to move than the car.

Because the truck has a much larger mass than the car.

#### What happens if...



1 A vehicle moves faster?

The vehicle consumes more fuel and its kinetic energy increases.

2 The mass of an object doubles?

The kinetic energy of the object will increase.

As an object's mass increases, its kinetic energy increases.

. كلما زادت كتلة الجسم زادت طاقة حركته.

Heavy objects have high kinetic energy causing more damage.

Light objects have low kinetic energy causing less damage.

## **Effect of Mass on Collisions**

If a b ke moving with a speed of 50 km/hr hits a person,



the person may get injured only and he/she will survive.

عندما تصطدم دراجة نتحرك بسرعة • ٥ كم في الساعة بشخص؛ قد يصاب الشخص فقط وينجو من الموت. If a car moving with a speed of 50 km/hr hits a person,



the person's life may be in danger.

عندما تصطدم سيارة تتحرك بسرعة ٥٠ كم في الساعة بشخص؛ تتعرض حياة الشخص لخطر شديد.

### 10 Energy Conservation During Collision

#### When you play a game with marble:



- >>> Kinetic energy is transferred from your hand to the 1st marble then to the 2nd one and so on.
- Some of the kinetic energy is converted into sound energy, so we hear a click sound during collision.

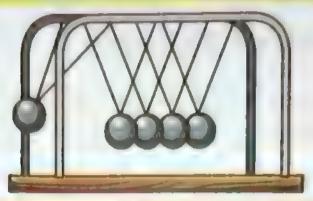
#### عندما تلعب بكرات البلي الصغيرة؛

تنتقل الطاقة المركية من يدك إلى كرة البلي الأولى ثم إلى الثانية وهكذا.

تتحول بعض الطاقة الحركية إلى طاقة صوتية؛ لذلك نسمع صوت طقطقة أثناء الاصطدام،



#### **Energy Transformation in Newton's Cradle**





When the ball is raised up - درامع السحول لأعلم

The ball stores potential energy.

. يُغْتَرِنُ الكرة طاقة الوضع،



عبد لرك الكرة لتتحرك - When the ball is left to move

 Potential energy decreases gradually and it is converted into kinetic energy. ، يقل مالقة الوضع تدريجيًّا وتتحول لطاقة حركة.



عندما تصطدم الكرة بأول الكرات - When the ball hits the 1st ball next to it

- Kinetic energy transfers to the 1st ball, then to the rest of the balls.
- Some of the kinetic energy is converted into:
  - I Sound energy produced during the collision between the balls.
  - 2 Thermal energy due to the friction between the strings and other parts of the cradle and between the air and the balls during their motion.
    - تنتقل الطاقة الحركية للكرة الأولى ومن ثمّ لبقية الكرات.
      - تتحول بعض الطاقة الحركية لــ:
      - 1 طاقة صوتية أثناء التصادم بين الكرات.
    - .2 طاقة حرارية بسبب الاحتكاك بين الحيط والأحراء الأحرى، وبين الهواء والكرات أثناء التصادم.

#### In Newton's cradle

The distance moved by the moving balls on the right side

The amount of energy before collision

The number of moving balls on the right side



The distance moved by the moving balls on the left side



The amount of energy after collision



The number of moving balls on the left side



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- Energy is transferred and converted into other forms, but it can't be destroyed.
- . Kinetic energy travels in two opposite directions among moving balls.



## What happens if...



- You leave the balls in Newton's cradle making anger of Their kinetic energy decreases gradually until they stop moving after a while.
- 2 Friction between Newton's cradle string and its other parts for a second Some of the kinetic energy is converted into thermal energy.
- 3 You pull two balls in Newton's cradle, then eave them to come and the rest of the balls.

Kinetic energy transfers from them to the rest of the balls, and two balls will move on the other side.







- 1) The amount of energy before collision is a participation of energy before energy before collision is a participation of energy before collision is a participation of energy before collision is a participation of energy before collision of energy As kinetic energy is converted into other forms of energy as (sound and heat).
- 2 You hear a sound from a collision between . . . . . Because some of the kinetic energy is converted into sound energy.

## Exercises on Lesson 4



#### Choose the correct answer:

11 By increasing the force acting on the cart, its kinetic energy ......

a, becomes zero

c. increases

b. remains constant

d. decreases

All the following affect the kinetic energy of an object, except

a. the object's mass

c. the object's color

b. the object's speed

d. the force acting on the object

The shape of the clay changes slightly when the ball

a. is thrown strongly

b. is thrown slightly

c. is dropped from your hand

d. is dropped from the top of a building

A car with a speed of . kilometers per hour consumes less fuel.

a. zero

**c.** 100

**d**. 150

Which object has the smallest engine?

a. A static car b. A moving truckc. A moving bike d. A static train

Which object consumes less fuel?

a. A moving bike

b. A moving car

c. A moving truck

d. A static car

7. The kinetic energy of the moving car decreases when

a. the car is sliding on the ramp

b. the fuel runs out

c. the driver applies brakes to decrease the car speed

d. the driver presses the gas pedal to increase the car speed

8 When a fast-moving car hits a woman in the street,

a. she will survive

b. she will be injured

c. her life is in danger

d. nothing happens to her

All the following forms of energy exist in Newton's cradle, except energy.

a. potential

b. kinetic

c. chemical

d. sound

10	In Newton's cradle, the potential e	energy is converted gradually	ın	to
	kinetic energy when			1
	a. the ball is raised up	b you leave the raised ball		
	c. the ball hits the first other ball	d. the last ball moves		П
1	In Newton's cradle, when the raised	ball hits the	*	
1345	second ball, the last ball moves as I			
	transfers to	9 6000		
	a. the third ball only	b. the second ball only		
	c. the last ball only	d. all the balls		
12	In Newton's cradle, when the ball i	moves towards the other balls	s, th	ne
45	potential energy			
	a. equals zero	b. increases		
	c. decreases	d. remains constant		
13	If you leave the moving balls of Ne	ewton's cradle long enough, ki	ne	tic
200	energy will			
	a increase gradually	b. decrease gradually		
	c. remain constant	d. be doubled		
14	energy is stored inside the balls	in Newton's cradle before leav	ing	it.
-	a. Chemical b. Sound	c. Kinetic d. Potential		
	Put (✓) or (X):	ii linetia appront docregges	(	)
1	As the mass of the object increases	s, its kinetic energy decreases.		
2	A heavy-moving object has a hi	gher kinetic ellergy than a	(	)
	light-moving object.	he injured only and surv	ive	
13	When a moving bike hits a man, he	e may be injured only and out	(	)
		du increases its speed decrea	ise:	S.
	As the force acting on a moving bo	ody increases, its speed de site	(	)
		an you raise the hall un	(	)
5	Potential energy becomes zero wh	en you ruise the boll op.	9	
16	A part of the kinetic energy is conv	erted litto soond chergg, so wi	(	)
	hear a click sound during collision.		,	1

	7	If two balls in Newton's cradle hit the rest of the bails, only one ba	ll wil
		move to the other side.	( )
	8	In Newton's cradle, some of the kinetic energy is converted into the	rma
		energy due to the friction between the strings and other parts di	uring
		collision.	( )
	P	A raised ball in Newton's cradle at 5 cm has more potential en	ergi
		than a raised ball at 6 cm height.	( )
	10	The kinetic energy travels in two opposite directions between the	balls
		in Newton's cradle.	( )
	Ħ	In Newton's cradle, the amount of energy before collision is equ	al to
		that after collision.	( )
	12	In Newton's cradle, the kinetic energy of the balls becomes zero	afte
		a lot of collisions as energy is destroyed.	( )
		Complete the following sentences:	
-			
	1	As an object moves, its kinetic energy decreases.	
	2	energy is affected by the object's speed.	
		If the clay ball is thrown strongly, its shape has change.	
		The shape of the clay ball is less damaged when it's thrown	٠
	5	When a ball in Newton's cradle moves towards the rest of the bal	s, its
		energy is converted into energy.	
	6	Some of the kinetic energy is converted into energy during coll	
		as we hear it, and some of the kinetic energy is converted into en	
	, etc.	due to the friction between the strings and the other parts during colli	
	Z.	If you leave the moving balls in Newton's cradle long enough,	their
	, Ze.	kinetic energy will until they	
	8	As time passes, the moved distance by Newton's cradle balls	
		gradually.	

#### Choose from column (A) what suits it in column (B):

#### Column (A)

- when the ball is raised up.
- when the ball moves towards the rest of the balls,
- The speed of the moving halls

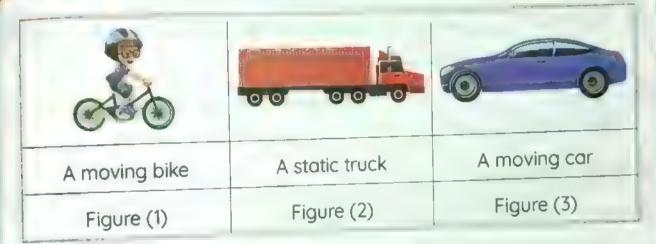
#### Column (B)

- a. potential energy changes into kinetic energy
- b. kinetic energy changes into potential energy
- c. decreases as time passes.
- d. increases as time passes.





## Study the following figures, then answer the questions below:



- Figure (\_\_\_\_\_) has no kinetic energy.
- Figure (.....) has no engine.
- Figure (.....) consumes fuel.
- The engine in figure ( ) is smaller than the engine in figure ( . ).
- (5) The kinetic energy in figure ( ) is more than the kinetic energy in figure (. ).



#### Arrange the following steps in Newton's cradle:

- ( ) The ball moves towards the rest of the balls.
- ( ) Kinetic energy transfers to all the other balls.
- The ball is raised up, so it stores potential energy.



- ( ) The last ball moves.
- ( ) The ball hits the first ball.
- ( ) A part of the kinetic energy changes to sound and heat energies.

## 0

#### Give reasons for:

- A moving truck consumes more fuel than a moving car.
- The engine of a truck is bigger than the engine of a car.
- There are many kinds of energy transformations that take place during the collision of Newton's cradle balls.
- The amount of energy before collision equals the amount of energy after collision.

## 1

#### What happens if:

- The force acting on a moving object increases (concerning its kinetic energy)?
- 2 An object moves faster (concerning its kinetic energy)?
- A fast-moving bike hits a person?
- A fast-moving car hits a person?
- You raise the ball in Newton's cradle up without leaving it?
- You leave the ball in Newton's cradle to move towards the other balls?
- The ball in Newton's cradle hits the first ball of the other balls?
- You leave the moving balls in Newton's cradle long enough?

## Assess Your Learning

## School Book Questions

## on Unit 2

Choose the co	orrect answer:		
In the opposite	figure, the box is	Smaller	Greater
	ces and moves in	the right direction	
b. balanced for	ces and moves in	the left direction	
c unbalanced	forces and moves	in the right direction	n
d. unbalanced	forces and moves	in the left direction	1
The force that d	ecreases an objec	t's speed or slows i	t down is _ force.
a. push	b. gravity	c. friction	<b>d.</b> pull
in the opposite	figure, the player t	hat has the greates	st potential energy
is		(2)	1 (4)
a.player numb	per (1)	(2)	
b. player numb	per (2)	(7)	(a) (X)
c.player numb	per (3)	(3)	In MI
d. player numb	per (4)		
The energy the	at a ball gains whil	e falling from abov	e is called
energy.			اممامه
a potential	b. kinetic	c. light	d. chemical
5 As the inclination	on angle of a surf	ace increases, the s	speed of an object
rolling on it			
a. decreases	b. increases	c.isn't affected	d. equals zero
6 On collision, th	e sum of energies	before collision is	the sum of
energies after	collision.		d. unequal to
a. equal to	b. less than.	c.more than	· ·
When a movin	ng car stops sudder	nly, the body of the	passenger moves
in the			

c. forward

b. left

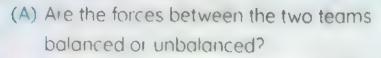
a. right

d. opposite



#### Answer the following questions:

#### 1 In the opposite figure:





- (B) In which direction would the movement of kids be (right or left)?
- 2 If two cars started to move for the same period of time of 20 seconds, car (A) traveled a distance of 100 meters, while car (B) traveled a distance of 300 meters, which car has the highest speed?

#### 3 In the opposite figure:

On releasing the compressed spring, there's a change from \_\_\_\_\_ energy to \_\_\_\_\_ energy.



#### In the opposite figure:

If both the car and the truck move at the same speed, which one causes more damage during the collision and why?





#### Choose from column (A) what suits it in column (B):

#### Column (A)

- 1 Gravity
- 2 Friction
- 3 Speed
- Potential energy

#### Column (B)

- a is the energy stored in an object.
- b is the force that pulls objects downward.
- of two objects in contact.
- d is the stored energy inside dry cells.
- e. is the distance covered in a unit of time.









# PROJECT WEHICLE SAPETY



- Modern vehicles are designed with a lot of safety features, such as seatbelts and airbags, to keep the driver and passengers safe.
- Sometimes a seatbelt is not enough during a collision, so the airbag is added to absorb the energy of the car during the collision.
- Airbags are made of nylon material and are folded inside the steering wheel, seats, dashboard, or doors.
- During a collision, sensors tell the airbag to inflate quickly with the gas to provide a soft cushion for the driver or passengers.





## Glossary

Theme 1 - Unit 1 - Concept 1						
Lesson	i (1)					
Adapt	يتكيف	Bare feet	حافي القدمين	Availability	توافر	
Toes	أصابع القدم	Fats	دهون	Weave around	يُلتف حول .	
Hump	السنام	Polar bear	الدب القطبي	Environment	البيثة	
Arctic region	القطب الشمالي	Adaptation	تكيف	Brown bear	الدب اليئي	
Desert lizard	سحلية الصحراء	Caracal	كاراكال (القط البري)	Shaded areas	أماكن الظل	
Fennec fox	ثملب الفنك	Palm leaves	أوراق النخل	Scales	حراشيف	
Waxy layer	طبقة شمعية	Fur	فراء	Survive	ينجو	
Sneak up	التسلل	Reproduce	يتكاثر	Blend In	يتخفى	
Penguin	البطريق	Camouflage	التخفي	Antarctica	القارة القطبية	
Predator	المقترس ُ	Dense feather	فراء كثيفة	Prey 1	الفريسة	
Blood vessels	أوعية دموية					

Lesson	(2)				
Structural adaptat	تکیف ترکیبی lon	Giraffe .	الزرافة 🔒	Behavioral adaptat	تكيف سلوكي 100
Arctic region	القطب الشمالي	Migration	الهجرة	Smelly message	روائح معيزة
Hobitat	الموطن	Camouflage	التخفي	Lose	184
Acacia trees	أشجار السنط	Strength	القوة	Kapok trees	أشجار الكابوك
Sense of hearing	حاسة السمع	Savannah	مناطق السافانا	Hunting ;	لصيد
Amazon rainforest	غابات الأمازون S:	Pants	يلهث	grassland	بوطن عشبي
Burrows	جحور	Lack	نقص	Arctic fox	لثعلب القطبي
Soggy soil	تربة طيئية	Bull shark	قرش الثور	Roots	الجذور
Countershading	التباين اللوني	Trunk	الجذع	Salt water	المياه المالحة
Leaves	الأوراق	Hand-shaped	شكل كف اليد	Scales	حراشيف
Fresh water	المياه العذبة	Taproot root	الجذر الوتدي	Toes	أصابع القدم
Deep_soil	أعماق التربة	Spines = Needles	أشواك	Poison	شم
Buttress roots	الجذور الداعمة				

Lesson	Service of				
Wetlands	مستثقمات	Digestion process	عملية الهضم	Desert	صجراء
Teeth	الأسنان	Forest	غابة	Tongue	اللسان
Float		Saliva	اللعاب	Resist	تقاوم
Crushes	تكسير - تفتيث	Triangular shape	شكل مثلثي	Chewing	المضغ
Cactus plants	نبات الصبار	Facilitates	تسهيل	Systems	أجهزة
Molstens	ترطيب	Organs	أعضاء	Starch	النشا .
Digestive system	الجهاز الهضمي	Muscular tube	أنبوب عضلي	Respiratory system 💂	الجهاز التنفس

Anus	فتحة الشرج	Functions	وظائف	Digestion process	عملية الهضم
Breathing	ئىمس	Get rid	تتعلمن من	Nutrients	مواد غدائية
Nose	الأنف	Mouth	القم	Trachea	القصبة الهوائية
Throat (Pharynx)	التلعوم	Two lungs	الرئتان	Esophagus	لمريء
Diaphragm	المجاب الماجن	Liver	الكبد	Inhalation	شهيق
Stomach	المعدة	Exhalation	رقير	Pancreas	لىمكرياس
Bronchi	شعب هوائية	Small Intestine	الأمعاه الدقيقة	Bronchioles	لقصيبات
Large intestine	الأمعاء الغليظة	Alveoli	الحويصلات الهوائية	Digestive Juices	مصائر معدية
Contract	ينكمش	Secrete	يفرز	Relax	بتمرر
Chest	الصدر				

Lesson (4					الرئتان
Gills	حياشيم	Cars exhausts	عوادم السيارات	Lungs	سئة
Soil pollution	تلوث النربة	Inhale	_	Ecosystem	
Exhale	يخرج	Asthma		TIONIUS.	نشطة الإنسان عادة زراعة
Heart problems	أزمات قلبية	Cutting down fo	310310	Replanting	<b>C</b> .55 co.c.
			قطع أشجار الغابات	_	or birth
Plowing grassland	تجريف التربة				

1.csson	To a second				-111
		Sensitive	حساسة	Endangered	معرضة للانقراض
Amph bians			ضفادع	Species	فصائل
Ext.nct		Frogs = toads		Extinction	الانقراض
Solamonder	سلمندر	Water stream	The same and the same and	T. AMERICAN STREET, SPICE STRE	جلد شه
Water ponds	مياء البرك	Throwing waste	إلقاء المخلفات	Skin	

#### Theme 1 - Unit 1 - Concept 2 Lucton (1) Communicate انعكاس تتواصل معًا Reflection البرمة Senses Owl البمس العصري Egyptian mongoose موحات الصوت الدلافين Sound waves Dolphins پتمرف Recognize الثرثرة Chotter صدى الصوت Echo مصدر Source

1.000011	(2)				الظلام
Nocturnal anima	الحماناه الناء	Nervous system	الجهاز العصبي	Darkness	1
Nocturnal anima	المخ الليتية 15	Navigate	البحث	Spinal cord	المخاع الشوكي
Brain	Ü	Nerves	الأعصاب	Bats	الخفانيش
Extraordinary	العمود الفقرى		الثدييات	Distributed	يتفرع
Backbone			أعضاء حسدة	Bounced from	تنعكس من
140		Sensory organs		Reflex	رد فعل
Sensory receptor	مستقبلات حسية ي	liny		Bowl-shaped face	وجه يشيه الوعاء
	نعتدو	Messages			نبات الصبار
Far	أشواك	Rotate (turn)	يلف	Cactus plant	البات الصبار
Spines		1		Sainnes Prim 4 F	To 02520

# o Glossary

Hind legs	أرحل حلفية	Translates	يترجم	Zigzag paths	مسارات متعرجة
Respond	استجابة	Hopping	القعر	Jerboa	اليرموع
Reaction time	زمن الاستجابة				

Lesson	(3)			-	
Gather	بحمع	Muscles	عضلات	Translates	ينرحم
Automat cally	للقائبا	Receive	يستلم	Reflexes	ردود الفعل المتعكسة
Blinking	إعماض العينين	Rely on	يعتمد على		

Losson	(4)				
Written symbols	رمور مكتوبة	Tones	بعمات	Ants	النمل
Series of songs	سلسلة من الأعاني	Humpback whal	es الحيثان الحدياء	Feeding Season	موسم العداء
Colonies	مستعمرات	Mating season	موسم التراوح	Individuals	أعراد
Sound pitch	حدة الصوت	Developed	ملورث	Rough voice	مىوت خشن
Different roles	أدوار مختلفة	Sharp voice	صوت حاد	Nurse ants	ع ملات النمل
Cone	عكاز طبي	Scout Ants	النمل الكشاف	Vibrations	امتزازات
Solider Ants	جنود النمل	Blind person	الشخص الكفيف	Alert .	بنيه ,
Pick up	يلتقط	Danger nearby	خطر قريب		

# Theme 1 - Unit 1 - Concept 3

LESTON	No.				
Low-Light areas &	أماكن منخفضة الإض	Light source	مصدر ضوء	Dark areas	أماكن مظلمة
Emit	ئبت	Glow	تلمع	Torch	كشاف ضوئي أير در
Fishing cot	القط السماك	Candle	شمعة	Wild cat	القط البري
Electric lamp	مصناح كهرني	Night vision	goggles	Wider	أكثر اتساعًا
F 6	a de h. e.		نظارات الرؤية الليلية		. 1
Mirror-like membrane		Dim light	أضعف درجات الضوء	Pupil	حيقة العبي 🔞 🐪
	غشاء يشيه المرآة				

Lapoine	(4)				
Mirror	المرايا	Rough surface	جسم خشن	Metals	المعادن ١٠٠١
Lenses	عدسات	Absorbed	الممتص	Shadow	الطل
Pass = transmit	يمر	Scatter	يشتت	Transparent m	aterials ·
					أجسام شقاقة
Straight ines	حطوط مستقيمة	Opaque materiais	أجسام معتمة	Direction	اتحاه ا

Loppon					
Fireflies	الحنافس المصيئة	Regular intervals	فتراث منتظمة	Chemical reaction	تعاعل كيميائي
Traffic lights	إشارات المرور	Wings	أجنحة	Lighthouses	منارات السفن
Warn off predat	tors . تجذير من المفترسير	Electronic reader	قارئ إلكتروبي	Attract a mate	حذب رفيق

Lesson (4)				
يلوع	Thumbs	الإيهام	Rescue flore	شعلة إمقاد
Wave Facial expressions نعبيرات الوحه	Hikers	الرحالة	decodes	بعك شعرة
Code Similar	Sailors	النمارة		

	T	heme 2 – Ur	nit 2 – Concept	1	
Locuon					الحركة
over!C	ساكن	Rocket	صاروح	Motion	
Static	مثبت	Force		Engine	معرك
Fitted	السرعة	Parachutes	باراشوت (مظلة هبوط)	Push force	ا قوه الدفع
Speed	قوة الهواء	Pull force	قوة السحب	Shockwave	أسرع شاحدة في العالم
Air force		Leaves	أوراق شمر	Truck	ٔ شاحبهٔ
Bag		Jet airplane	طائرة نفاثة	Fire extingui	مهاية حريق sher
Engineers Distance		Cart	عربة تسوق		

- 1 stant 12				
forces	غوى متزية	Chair	كرسي	فوی عبر متربة Unbalanced forces
Balanced forces			لعبة شد الحيل	Act on تؤثر على
Drop		Tug-of-war		
Gravity	الجاذبية	Rotation	دوران	

					- ,7
The state of the s	قوة الاحتكاك	Stop	يوقف	مسة Touching surfaces	اسطح مثلا
Friction force	موه الاختيان	Stop			بقوة
Gently	برفق	Slow down	يبطئ	Hard	

Letter (1)		الشعن
Energy Idelia	Flat road degi marg	

# Theme 2 – Unit 2 – Concept 2

75777	1				
		Sliding	الانزلاق	Potential energy	طاقة الوصع
Kinetic energy			يخزن	Electric devices	آحيرة كيربيه
Height		Stores		Thermal energy	الطاقة الحرارية
Chemical energy	الطاقة الكيميائية	HIII	الطاقة الضوئية		الأعلى
Roller coaster Au	قطار الملامي السر	Light energy.	السفل المتولية	Opwars	
Electrical energy		Downward			

Lessor	(2)				القدرة
Fuest	پېدل	Position		Ability	2 4
Exert		Change	يثعير	Tower	 المرج
Gain		Criding			

i cosen (3)				موجات الصوء
موجات الصوت Sound waves	Washing machine		Light waves	ا فرن
كشاف الضوء Flashlight	Water particles	جريئات الماء	Oven	

# Glossary

Wires	أسلاك	Fan	مروحة	Compressed s	ون او مضغوط pring
Bell.	OU+				
koon					
Robot	إيسان الي	Powered by	يستمد طاقته من	Invent	يفترع - يبتكر
Create	بحلق				Ç

The second second	40.00	40 h 40 h 40 h 40 h			
Theme					A 66
			/ _ Li	nia rom	
				Ullunel	
	_				

C. Lewis	(1)				
Collision = crash	تصادم ng	Airbag	الوسادة الهوائية	Heavy objects	الأحسام الثقيلة
Seatbelt	حزام الأمان	Light objects	الأجسام الخفيفة	Folded	مطوية
Truck	شاحبة	Steering wheel		Damage	رمار
Dashboards	لوحة التابلوه	Wrecking ball		Inflate	تنتفخ
Swing	معلقة من أعلى	Deflate		Construction wo	rkers alall III.
Automatically	تلقائيًا			Absorb	عمال الشاء و ١٨٠٠
Colide = hit	يصدم أو يضرب	Sensors	المستشعرات		لعبة الكريكيت
Seats	المقاعد	Safety equipment	وسائل الأمان	Train tracks	سب سريات قضبان القطارات

Physical measurement	Distance	مسافة	Remains constant	يظل ثابتًا
زمن Time	Speed	سرعة	Inclined ramp	مستوى مائل

Transfer	تبثقل	Object's mass	كتلة الحسم	Traffic sign	H = 1 p.s
Severe		Get injured		order orgin	إشارة المرور
Vibrate	تهنز			Louder sound	صوت أعلى

Ciay	صلصال	Energy Conservation	i dallall -N	Call	
Raise a ball up	يرفع الكرة لأعلى	Thrown slightly			يسقط
Thrown strongly		Newton's cradle		Engine	محرك
Morble ball	كرة البلي	Survive	بندول نيوتن	_	يدمر
Store	7 40	P. Co. St. To Section 1 Co.	سيارة (مركبة)	Gradually	بالتدريج
			(-5-)		

BOWN

2024

# SCIENTE

FINAL REVISION

مجانا

PRIMARY FIRST TERM

Almed Omara

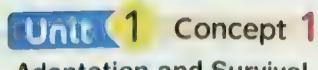
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# Summary





# **Adaptation and Survival**

Adaptations

- They're the characteristics that help living organisms survive and reproduce in their ecosystems
- · If a trying organism adapts, it will survive and reproduce
- If a living organism can't adapt, it will die or go extinct.

PO.C

### 1 Structural (Physical) Adaptation

Behavioral Adaptation

Definition

- · It's a change that happens in the structure of the living organism's bodu.
- It's a change that happens in the behaviors (acts) of a living organism.

Examples

- The blood vessels in a penguin's feet
- The thick fur of the polar bear
- The desert lizard looking for shade
- Bird's migration

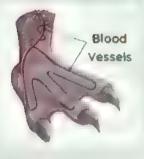


### 1 Adaptation in Animals

### Penguin Habitat (Antarctica)



- A penguin has a thick fat layer and dense feathers on its body.
- To keep its body warm in the cold weather.



- A penguin's feet don't have feathers or a fat layer, but a penguin can stand on ice all day.
- Because the blood vessels that carry warm blood from its body weaves around the blood vessels that carry cold blood from its feet.
- Note:
  - Warm blood moves down from its body to its toes.
  - Cold blood moves up from its toes to its bodu.







	Ecosyste Habitat	Wall of Adaptation
O Polar Bear	Arctic	It has thick fur. To keep its body warm It has white fur. To blend in with the snow to sneak up on the prey
2 Brown Bear and Black Bear	Forests	They have dark fur. To hide among trees during hunting.
S Caracal and Fennec Fox	Deserts	They have tan-colored (brown) fur. To hide and blend in with the desert environment.
<ul><li>Lizards</li></ul>	Deserts between colorful rocks	They have colorful scales.  To hide among the rocks in the

It is a type of adaptation that some animals use to hide Camouflage from predators or sneak up on prey by blending in with the surrounding environment.







Structural Adaptation

Behavioral

Adaptation

- · It uses a camouf age strategy called "countershading", as it has a dark back and a white belly To sneak up on the prey.
- It has sharp teeth To cut the prey's flesh.
- It can hunt in salt and fresh water.
- It can hunt at day and night to surprise its prey.
- · It feeds on different types of food (varied diet).

Note:

In fresh water, a bull shark has less competition for finding food.

### Fennec Fox (Habitat: Desert)









Fur Structural Adaptation (coat)

It has tan (brown) fur. To hide in the desert environment.

It has a thick fur coat. To help it stay warm. It has white fur in winter and brown fur in summer To hide from the prey in any season.

Ears

tinas extra large ears To lose heat and cool its body.

It has short ears and legs. To help it stay warm.

It pants like dogs To cool its body.

Behavioral Adaptation They hide in burrows to overcome extreme climate, where the tennec fc> stays c ... in burrows on sate ... ... , and the Arctic fox stays warn in burrows at

They eat different kinds of food (varied diet), such as insects, fruits, plant roots and prey remains. Because it is hard to find any food in the desert.

### Panther Chameleon Lives in tropical rainterest

- It has bright-colored scales.
  - To hide and blend in with the surrounding environment.

Structural Adaptation

- · Its eyes move in opposite direct in the residentice
  - One eye searches for food and the other eye to avoid danger.
- It has V-shaped feet and a tail like a hand
  - To hold the branches of trees tightly.

Behavioral Adaptation In danger, it scares its "ttacker by"

- Puffing up its body with air.
- Opening its mouth wide.
- Changing its scales color.



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# Adaptation in Plants

• Plants can grow everywhere, and they have the total and behavoral adaptations, like animals, that help them solver in different environments



Plant	Habitat	Structural Adaptation	Reason
Water Lily	Wetland (Fresh water)	It has wide leaves     that float on the water.	• To absorb a lot of sunlight.
2 Palm Tree	Desert	It has thick roots     and narrow leaves.	To resist the strong wind.
6 Pine Tree	Snow	It has a triangular shape and short branches.	To allow the snow to slide easily over the branches without breaking them.
		It has needles     instead of leaves.	To prevent water     loss.
Mangrove Tree	Salt water	It has long and strong roots.	To resist the water waves.
<b>5 Barbary</b> Fig	Desert	It has sharp spines     and a tough outer     cover.	• To prevent animals from eating its leaves and fruits.

#### o Final Revision

P.O.C.

Acacia Tree

Savannah grassland (in Africa)

Grassland habitat

- Habitat . The temperature is mild
  - Lack of water (drought conditions)

### Kapok Tree

Amazon rainforests (in Brazil)

- It has soggy soil,
- It is characterized by the strong wind.
- It's easy to find water as there's plenty of it.

Shape

Both of them are "Umbrella shaped trees"

### Structural Adaptation

Taproot roots

(grow downwards)

Roots

Trunk

- It reaches 35 meters below the surface.

To search for water in deep soil.

- Its trunk stores water as camels The length of the tree exceeds store fats in their humps.
- It has a too long trunk.
  - (Only a giraffe can reach its
  - leaves.)
- Tr., leaves to hold water.
- Leaves
- Sharp spines to protect it.

Buttress roots

(grow upwards)

- To fix the tree firmly in the soggy soil.

- 70 meters to reach the sunlight
- Hand-shaped leaves with narrow parts

To allow the wind to move gently without tearing them.

### **Behavioral Adaptation**

When a graffe eats its leaves

- It produces poison.
- It sends smelly messages to
   Its delicious-smelling flowers nearby trees to start producing • The tree's fluffy yellow seeds the same poison.

It sends messages through the wind, such as:



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**Throat** (Pharunx)

Esophagus

Stomach

### **Human Digestive System**

Digestion @

It's the placess of breaking down food into the simplest. form to provide the body with nutrients.

Mouth

Liver

Small

Anus.

Intestine

**Pancreas** 



The digestive system breaks down the food, so the body can use it to get energy.

### Important Note:

· The digestive system storts with the mouth and ends with the anus.

### Digestion Process Pathway:

Mouth Throat Esophagus Stomach

Small Intestine

Large

Intestine

Pancreas and liver pour their juices.

### How does the digestive system work?

### Mouth

Digestion of food starts in the mouth.

Teeth

They crush (break) the food during chewing.

Saliva

A liquid substance that moistens the food.

It breaks down food chemicallu.

Tongue • It mixes the crushed food with saliva.

- Chewing food breaks it up mechanically.
- The saliva breaks down the food chemically.

### Pharynx (Throat)

When you swa low, your throat pushes the food into the esophagus.





Final Revision

### Esophagus

· It is a long muscular tube that moves the food down into the stomach.



### Stomach

- · It is a muscular organ.
- Function of the stomach:

The stomach mixes the food with the acidic and digestive juices (enzymes) until it becomes a soupy liquid.

The food stays in the stomach for a few hours.
 Then, the muscles of the stomach move the food into the small intestine.

### Small Intestine

· It's a long, winding tube. (More than six meters long)

### Function of the liver and pancreas:

They pour juices into the small intestine that help break down food into nutrients.

#### Function of the small intestine:

The nutrients from the food are obsorbed through the walls of the small intestine to enter into the tiny blood vessels.

#### Then:

- The blood carries nutrients to all body parts.
- · Undigested food flows into the large intestine.

### (3 Large Intestine

 It's a tube that starts from the end of the small intestine and ends with the anus.

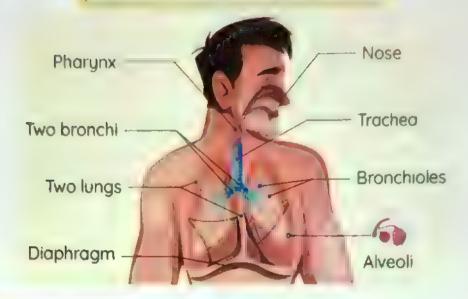
# J

### Function of the large intestine:

- · It absorbs water from the undigested food, so that they become solid waste.
- Solid waste leaves the body through the anus



### **Human Respiratory System**



### Respiratory Process Pathway:

Nose

Pharynx

Trachea

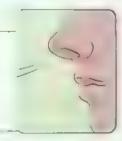
Two Bronchi

Bronchioles

Alveoli

# How does the respiratory system work?

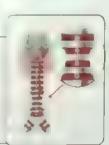
- Nose:
- It is the first organ of the respiratory system.
- · Air enters the body through the nose and mouth



- Throat (Pharynx):
- It allows air to pass to the trachea.



- Trachea:
- It's a tube that allows air to pass to the two lungs.
- Inside the lung, it is divided into two bronchi at its end.

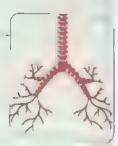


### Final Revision



### Two Bronchi:

- They allow air to enter the two lungs.
- · They are divided into smaller tubes that look like trees' branches called branchioles





### Two Lungs:

- They are filled up with air like two balloons.
- · Bronchioles end with tiny air sacs surrounded by blood vessels called alveoli.
- · Alveoli are responsible for gas exchange



### **Respiration includes**

### Impeliation Process

"Pulling the air in"





"Pushing the air out"



### Diaphragm

Moves downward (Shrinks or contracts)

Moves upwards (Relaxes or expands)

### **Chest Size**

Increases (Enlarges)

Decreases (Becomes narrower)

### Type of Air

Air rich in oxygen gas enters the lungs.

Air rich in carbon diox de gas is expelled out the lungs.

### Diaphragm:

- It's a large muscle at the base of your ribs that has an important role during inhalation and exhibition.





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#### Human

Fish



Differences

Humans have lungs & So, they live on land

Eish have gills So, fish live underwater

Similarities

- Both of them inhale oxygen gas and exhale carbon dioxide gas
- Blood carry oxygen gas to all body parts

### How do fish breathe?

- Fish have gills to breathe underwater.
- · Gills are found on both sides of a fish's head
  - Water enters the mouth of a fish and passes across the gills
  - 2 The brood vessels in the gills carry oxygen gas to the rest of the body, and release carbon dioxide gas.

### **Amphibians**

They are small animals that live in moist environments (rainforests - streams - ponds) such as:

Frogs



Toads

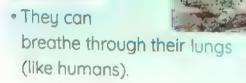


Salamanders



### Respiration in amphibians







They can also
 extract oxygen from water using their skin.
 (Structural Adaptation)

- Amphib.ans are covered with wet skin that water and gases can pass through.
- Amphibians are very sensitive to any environmental pollution

### Factors that cause extinction of amphibians

- 1 Air:pollution
- 2 Water pollution (Viruses in water)



# Human activities that change the environment

- Cutting down forests
- [2] Plowing grasslands or clearing lands
- 3 Building communities
- 4 Ai pollution (Cars exhausts and factory pollution)

People living in cities are exposed to a high level of air pollution that causes:

Lung damage	Asthma	Heart problems

- 5 water and soil pollution (Dumping waste in waterways or soil)
- introducing plants and animals too an ecosystem that they were never a part of

Living organisms are affected by changes in the ecosystem.

Animals	Some animals can survive by moving to another ecosystem.
Plants	Plants must rely on their seeds landing in a better place for them to survive and grow.
Humans	<ol> <li>Air pollution (smog) makes it hard for humans to breathe.</li> <li>Water pollution makes it hard for humans to find clean water.</li> </ol>
	3 Soil pollution makes the crops not grow.

### The role of humans to help restore the ecosystem:

- 1 Replanting cleared forests
- [2] Removing air and water pollutants
- 3 Preserving native plants and animals
- 14) Science Prim. 4 First Term



### Senses at Work

- · Animals have sharper senses than humans to
  - Adapt to the environment.
  - 2 Search for food
  - 3 Protect themselves.
  - 4 Communicate together.



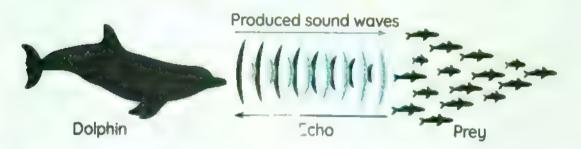


### **Egyptian Mongoose**

 It communicates with other mongooses by producing sounds like chatter to move and search for food.



### Dolphins



• Dolphins uses a property known as "ecno-ocation" that depends on "ecno" to locate their preys and objects in the dark water.

### How do dolphins locate things?

- 1 Dolphins produce sound waves through the water.
- When these waves hit any object, they return to the dolphins as an echo.
- 3 Dolphins use their sharp hearing sense to detect echoes.

### **Nocturnal Animals**

· Some animals are active at night and are known as "nocturnal animals"

### Why do nocturnal animals hunt at night?

The nocturnal animal may live in a hot region, so it prefers to look for food at night.

2 Some prey are only available at night.
Some animals depend on complete darkness to surprise their prey

Nocturnal Animal	Adaptation	Reason
Bats (mammals)	<ul> <li>Bats can't see in the dark.</li> <li>They use echolocation and their super hearing sense.</li> </ul>	• To locate their prey (insects).
Owls (birds)	• They have extraordinary sight and hearing senses.	• To locate their prey.
(DyO)	<ul> <li>They can rotate their heads in all directions.</li> </ul>	To search for the prey everywhere.
	<ul> <li>They have bowl-shaped faces and feathers in their heads.</li> </ul>	To detect distant sounds and quiet movements.
Jerboas (Desert rodents)	• They have large ears	To help them hear the no se of nearby moving snakes
	• Their feet and toes have hair.	• To grip the sand when they jump in zigzag paths.
	They have long hind legs	To enable them to jump for long distances

### Nervous System

- Mammals, such as humans, elephants, and dogs have the nervous system
- The five sensory organs (eyes, nose ears, tongue, and skin) are part of the nervous sustem.
- The components of the nervous system are connected together by nerves





The main control center of the body

### Spinal Cord

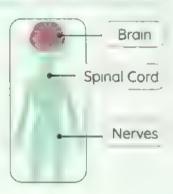


It carries messages from the brain to the body, and vice versa.



They carry messages from the brain to the spinal cord and other body parts, and vice versa.

- The brain is connected to the spinal cord by nerves that pass through the backbone.
- The spinal cord branches are distributed through all body parts.
- Some nerves are connected directly to the brain, such as the eyes' nerves.



### Importance of the nervous system

- Gathering information about what is happening inside or outside the body.
- 2 Understanding what this information means.
- 3 Telling the body what to do.

### How does the nervous system work?



- 1 The sensory receptors near the organs (eyes ears nose tongue skin) gather information about what's happening inside and outside your body.
- **2** The nerves carry the information from the sensory receptors to the brain.
- 3 The brain processes this information and translates it
- 4 The brain sends a response to the body to tell it what to do

### Final Revision

Reflex action

It's a type of messages that are so fast you are barely aware of them.

Examples

- · You move your hand away when you touch a hot object
- You blink your eyes when something comes near them

Reaction time

It's the time taken by an organism's body to respond to danger and move away from It.



When a girl touches the spines of a cactus plant she will withdraw her hand quickly in less than one second



# When a jerboa hears a snake moving nearby

- The sensory receptors in its ears send a message through the nerves to the brain.
- The brain translates this information and gives a response by alerting its legs to jump.
- The jerboa's strong hopping legs start to jump away to escape from danger in less than one second.

### .1)

### Human Communication

- People first started sharing information using written symbols
- Technology systems a low us to call, text, and send email messages over great distance;



### Ant Communication

- Ants I ve in colonies that contain thousands of individuals.
- Ants use their sense of smell to communicate.



- · Ants have developed systems that help them divide their work.
- · Groups of ants within a colony have different roles.

Nurse Ants

Nurse ants send strong smelly messages.

To alert scout ants that responsible for locating food

Scout Ants

They search for food and locate it.

Soldier Ants

They use smells to communicate if there is danger nearby



O Science Prim. 4 - First Term



### **Humpback Whales Communication**

- They sing a wide range of tones and a series of songs to communicate.
- The songs of humpback whales have different sound pitches depending on the season.
- Winter is considered the mating season.
- Summer is considered the feeding season.





- · A man has a rough voice. (Low-pitched sound)
- A woman has a sharp voice. (High-pitched sound)





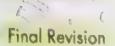
- Bats also use sound to get information about their surroundings
  - A bat produces a high-pitched sound.
  - The sound hits the object and reflects back.
  - 3 The bat hears the echo (reflected sound).
  - 4 The bat locates the object nearby.



### Cane (Bat-Inspired Technology)

- Scientists created a cane that emits high-pitched sounds to help blind people detect their surroundings
  - 1 As a blind person walks, a special cane picks up the echo of the high-pitched sounds.
  - 2 The echo is turned into vibrations that the person can feel using his/her thumb.
  - 3 These vibrations tell the blind person about nearby bodies.





# Unit 1 Concept 3 Light and Sight

- · Humans see objects less clearly in dim light.
- · Humans can't see anything in complete darkness
- · Humans eyes need nant vision gog res to see in the dark



### Humans need a source of light to see clearly.

Source of Light It's something that emits (gives off) its own light

The Sun Electric Lamp

Fire

Flashlight

Candle









- The Sun is considered a natural source of light.
- The moon is not a source of light because it reflects the sunlight falling on it.

### How can we see things?

- 1 A source of light emits light.
- 2 Light falls on the object.
- 3 Light bounces off the object for the eyes to see it.
- 4 Sensory receptors in the eyes send the message to the brain.
- 5 The brain forms a picture about what we see.









### **Light Reflection**

### How does light reflect?

### Smooth (Shiny) Surface

### 444 444

- A smooth surface reflects most of the light rays falling on it
- Light rays are reflected in the same direction with the same angle.
- Mirrors
   Metals

### **Rough Surface**



- A rough surface reflects some of the light rays falling on it.
- Light rays are diffused/scattered in different directions.
- Wood
- Papers
- Clothes
- \* Light is a visible form of energy that travels in a straight line in the form of waves.

### **Transparent Materials**



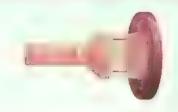
- They are the materials that : ... light to pass through.
- Things behind them contains a

### Examples

- AirWater
- Windows

Lenses

### **Opaque Materials**



- They are the materials that don't allow light to pass through.
- Things behind them can't be seen.

### Examples

- Human body
- Wood
- Metal
- Snade what the war light falls on an opaque object



### **Nocturnal Animals**

- Nocturnal animals can see better than humans in the dim light
  - Nocturnal animals have bigger eyes than humans
  - The pupils of the eyes of nocturnal animals open wider than the pupils of human eyes.





### **Fishing Cat**

Its eyes seem to glow in the dark (structural adaptation).

 Because they have a mirror-like membrane on the back of the eye, that reflects the light entering the eye and allows it to collect more available light.



### **Fireflies Communication**

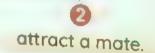


Habitat: They live near mangrove trees in Thailand.

- Fireflies are not fies. They are actually winged beetles.
- Firefiles produce a chemical reaction inside their bodies that allows them to light up

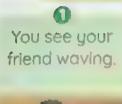
Fireflies use their wings to flash at regular period of time (intervals) to

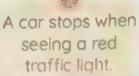
warn off predators.

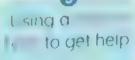


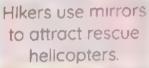


# Examples of information that the eyes receive



















- In the past humans used
- to communicate from a distance
- Humans use codes to transmit information.

Code It is a pattern that has a meaning.

Thumbs-up or Thumbs-down	
2 Facial expressions. They help people know what we feel.	999
3 Language It is a code in the form of sound Different languages have different codes, but they transmit information.	
4 writing It is a code in the form of symbols or arranged letters giving a specific meaning.	Dear
Music or sounds: They are used to encode messages.	
6 Lighthouses They encode information in flashes to guide sailors in dangerous water.	

- Sense organs receive information and send it to the brain
- The brain decodes and interprets the meaning.

# Starting and Stopping

First

MITTER



An object stays static when it doesn't change its position because there is no force acting on it.



An object moves when it changes its position because there is a proper force acting on it.

Motion

It is the change in an object's position as time passes relative to a fixed point.

To move any static object:

- A pushing or pulling force must act on it.
- <sup>2</sup> A change in the position happens as time passes.

### Some motion is

# Easy to be seen Walking A leaf falling a ball Rotation of Earth around the Sun

# Second

Force It is a push or pull applied on an object to change its position.

### The force can:

Stop a moving object.

Change the object's speed.

Change the object's direction.

Move a static object.







The direction of force is determined by the total force applied on the object.

Gravity

- Sitting on a chair:
  - Gravity is pulling the girl downwards.

Arm Pulling Force

Gravity Pulling Force



- 2 Holding objects:
  - The man's arm is pulling the bag upward, while gravity is pulling the bag downward.

Gravity •

it's the force that pulls the objects downward to the Earth's center.

### - Final Revision

# By increasing the acting force on a borly

 ts speed and kinetic energy increase and the distance covered by the body increases.

When we push a car gently, the car moves slower and covers a shorter distance.

When we push a car hard. the car moves faster and covers a longer distance.



### By applying the same force on different objects

- The small car moves for a long distance.
- The big truck moves for a short distance.



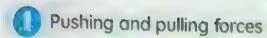
It is the ability to do work.

It is the effect that changes energy into work done.

The boy who pushes the wall doesn't do any work. Because the wall doesn't move.

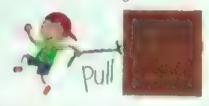


# Third Tener Type



### Pulling

A force that moves an object towards you.



### **Pushing**

A force that moves an object away from you



# Balanced and unbalanced forces

In a tug-of war game, two teams pull the rope in opposite a rections.

### **Balanced Forces**

The rope doesn't move when the forces acting on it are balanced.



### **Unbalanced Forces**

The rope moves towards the greater force when the forces acting on it are unbalanced



# Air force

Air force (wind blowing) can move some objects, such as the tree leaves.

### How did engineers prove that air causes movement?

- Engineers attached a fire extinguisher to a cart
- When air is released backward, the cart begins to move forward
- By increasing the number of fire extinguishers,
  the speed of the car increases and it covers a longer distance.





# Fourth Moving Objects



Shockwave

(World fastest truck)



- · A jet engine is much more powerful than a normal engine So, an amplane is much faster than a truck
- It has three jet engines.
- Its speed can reach 500 kilometers per hour
- It is five times faster than a normal truck

How does it move?

It moves by the pushing force of its powerful jet engines How does it stop? (As a rocket design)

Engineers installed three parachutes that he p the driver to slow it down quickly.

### **Stopping Objects**

tops of the a force acts on it with the same amount but in the opposite direction.

Co. sion

- When a moving car crashes into a wall, it stops.
- Because the wall applied a force to the car with the same amount and in the opposite direction.



### Friction Force

- It is a force that arises when two surfaces rub against each other.
- It acts in the opposite direction of the motion.
- . It arways slows down or stops the moving object



Force of Friction



Science Prim. 4 - First Term





# Unit 2 Concept 2 **Energy and motion**

### Energy basics

**Energy** • It is the ability to do work or to make things happen

Force • It is the effect that changes in irrainto work done

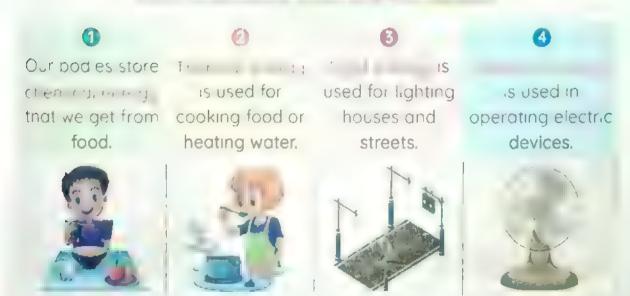
Work It is the exerted the applied on an object causing motion

### Relationship between Energy and Work

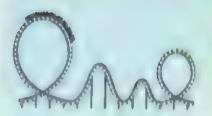
- The boy needs energy to move the box.
- The boy exerts a pushing force on the box.
- When the box moves, there is a work done.



# Importance of Energy for Us



# Properties of Energy



Energy can be stored and changed from one form to another, such as in roller coasters.



Most forms of energy can't be seen, such as sound, thermal, chemical and electrical energies.



The work done by energy can be seen and measured, such as: when the goal net vibrates when it gains kinetic energy

### **Moving Energy**

### Example: When a football player kicks the ball:

- T Kinetic energy transfers from the player's foot to the ball, so the ball moves.
- (2) The ball moves in the air because it gains kinetic energy.
- The goal net vibrates as kinetic energy transfers from the ball to the goal net.







### Roller Coaster

### At the beginning

During moving



- I lectricity and motors carry the cars up to the top of the ramp.
- The stored potential energy increases gradually.

At the highest point (On the ramp)



 The stored potential energy becomes maximum.

During sliding down



- The stored potential energy is converted into kinetic energy.
- As we move down:
   the speed and kinetic energy increase.



### Scientists classify energy into two types

### **Potential Energy**

 It is the energy stored in an object due to its position.

### Example:

When you raise the ball.

### **Kinetic Energy**

 It is the energy that an object has due to its motion.

### Example:

When you leave the ball to fall.

### Potential energy depends on:

- The height of the body.
- 2 The mass of the body.

### Kinetic energy depends on:

- 1 The speed of the body.
- 2 The mass of the body.



A static object at a height stores **potential** energy

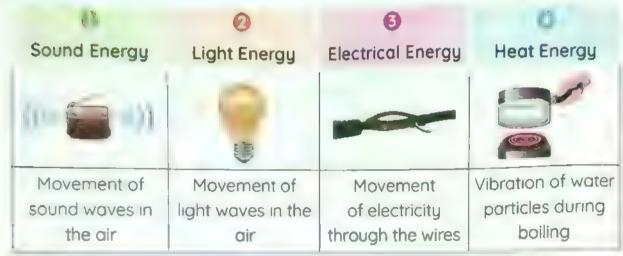
A moving object has **kinetic** energy

A static object on the ground has **no** energy



# ú

### Forms of kinetic energy





### Forms of potential energy

Gravitational Potential Energy

Chemical Potential Energy

A ball at the top of a hill stores gravitational potential energy.

A battery stores chemical potential energy.

A spring stores potential energy in it.



# **Energy Transformations**

· Potential energy can be converted easily into kinetic energy

	Figure		
Flashlight (Torch)	CHARLES	Chemical energy (Stored in a battery)	Light energy Thermal energy
Gas oven		Chemical energy (Stored in natural gas)	Thermal energy
Spring toy car	6 O	Potential energy	Kinetic energy
G Real Car		Chemical energy (Stored in gasoline)	Kinetic energy Thermal energy Sound energy
Spring	. 1711 901	Potential energy	Kinetic energy
<b>6</b> Food		Chemical energy (Stored in the food)	Kınetıc energy

## Concept 3 **Energy and Collisions**

Collision It is the moment when two moving objects crash

#### When two cars collide

Energy transfer occurs. • Energy change occurs.



### The damage of collision depends on



The speed of the two cars

## Fast-moving Objects

- They have more energy.
- When they hit another object, they exert more force.
- This force causes a big damage that cannot be repaired.



- When they hit another object, they exert less force.
- This force causes a small damage that can be repaired.



The direction of the two cars

#### Some Direction

severe The damage w.ll be



#### Opposite Direction

· The damage will be incre severe





34) Science Prim. 4 - First Term





## Examples for Collision

#### Wrecking ball

- It's a very heavy steel ball swinging on a cable
- It is used by construct on workers to knock down walls or parts of buildings.



#### Cricket

The player uses a wooden bat to hit the ball.

## When the player hits the ball:

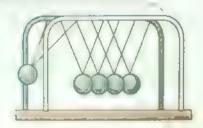
- Kinetic energy transfers from the bat to the ball.
- The speed of the ball increases.
- The ball returns in a different direction.
- Collision always produces a popping sound.



#### Newton's cradle

#### When the ball is raised up:

 The ball stores potential energy and doesn't contain any kinetic energy.



#### When you leave the ball-

· Potential energy decreases gradually and is converted into kinetic energy.

#### When the ball hits the 1st other ball.

- Kinetic energy transfers from the 1st ball to the rest of the balls
- Some of the kinetic energy is converted into Sound and thermal energies

## If a truck (more mass) hits a car (less mass):

\* Energy will transfer from the truck (more mass) to the car (less mass)

Because the truck has than the car

\* The truck (heavy object) causes more damage than the car (light object)



## If a fast car (higher speed) hits a slow car (lower speed):

- Energy will transfer from the fast car (higher speed) to the slow car (lower speed)

  Because the fast car has than the slow car.
- Fast objects cause more damage than slow objects.



## Safety Equipment Front Learning on



#### Seatbelt

It's used in cars to keep the driver and the passengers from moving forward during a collision (when the car stops suddenly).





## Airbag

#### Structure

It is made of a thin nylon material and is folded into the steering wheel, dashboards, seats or doors.

#### Idea

#### During collision:

• The airbag inflates automatically because the sensors of the car detect a crash.

#### After collision

- The airbag defiates as fast as it inflates because it has holes and vents so that the driver can get out of the car.
- provide a soft cushion.

## **Importance**

- It slows the speed of the driver or passenger when his/her body moves forward.
- It absorbs the energy of the car during collision.





## Spend

- Speed is a physical measurement that indicates how fast objects move
- . It is the distance covered by a moving object in a unit of time
- The direction of the moving object doesn't affect the speed

## How to Measure the Speed

10 You must know the 1000 rovered by the object	M. alorkiomer
2 You must know the taken to cover this distance	",econd or hour
3 To find the speed.	1 21 12
Speed = Distance ÷ Time	m/ ce or km/nr

#### Problem:

• If Kenzy r des a bike and covers 150 in 15 keconar to reach the supermarket, calculate the speed of the bike.

## Comparing the Speed of One Body to Another

The relationship between the speed and distance

(At the same time)



The car has a

Because the car covers

The relationship between the speed and time

(At the same distance)



The cheetan has a raction in

Because the cheetah covers

2

# Definitions



## Concept 1

Adaptations	They are characteristics that help living organisms to survive and reproduce in their ecosystem				
Habitat	It's the place (environment) where the living organism live				
Structural adaptation	It's a change that happens in the structure of the organism's body.				
Behavioral adaptation	It's a change that happens in the behavior of an organism.				
Camouflage	It's a type of adaptation that animals use to hide from predators or to sneak up on the prey.				
Countershading	It's a camouflage strategy in which the bull shark has a dark back and a white belly.				
Migration	It's a behavioral adaptation where some birds travel for long distances at a certain time of the year.				
Predator	It's an animal that hunts or eats another animal.				
Prey	It's an animal that is hunted or eaten by another animal.				
Blood vessels	They weave around each other in a penguin's feet.				
Penguin	It's a non-flying bird that has a thick fat layer and dense feathers on its body.				
Camel	It's an animal that stores fats in its hump to adapt to the desert environment.				
Caracal	It's a cat with tan-colored fur that lives in the desert habitat.				
Polar bear	It's a bear that has white thick fur and lives in polar regions				
Black (brown)	It's a bear that has dark fur and lives in forests				

It's a bear that has dark fur and lives in forests.

It's a fox that has tan (brown) fur and lives in deserts.

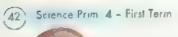


bear

Fennec fox

Arctic fox	It's a fox that has white fur in winter and brown fur in summer and lives in tundra.			
Bull shark	It's an organism that uses countershading strategy to hunt			
Agama lizard	It's a izaid with co-orful scales that adapted to live in the desert			
Panther chameleon	It's a lizard that can change the color of its scales and adapted to live in tropical rainforests.			
Amazon rainforest	It is a rainforest that is characterized by strong wind and soggy soil.			
Savannah	It is a grassland habitat that has drought conditions			
Kapok tree	t is a terrific tree that grows in Amazon rainforests in Brazil			
Acacia tree	It is a terrific tree that adapted to survive in drought environment in savannah grasslands.			
Taproot roots	They're very long roots that grow directly downward in acacia trees.			
Buttress roots	They're wide and large roots that fix kapok trees firmly to the soggy soil.			
Pine tree	t's a tree that adapted to survive in snow and has a triangular shape.			
Water lily	It's a tree that has wide leaves floating on water to absorb sunlight.			
Mangrove tree	It's a tree that grows in a salt water and has a strong, long root			
System	It's a group of organs that work together to perform a job (function).			
Digestion	It's the process of breaking down food into the simplest form to provide the body with nutrients.			
Digestive system	It's the body system that breaks down food into tiny pieces, so the body cells can use them for energy.			
Mouth	It's the organ where the digestion of food starts.			

Teeth	ts the stricture that crush (break) the food during chewing			
Tongue	It's a structure mount of mouth that mixes the crushed food with saliva.			
Saliva	ts a quitebor tance in ide the mouth that moistens food			
Pharynx	<ul> <li>It's an organ that exists in both the digestive and respiratory systems.</li> <li>It's a common passage for both food and air.</li> <li>It's an organ that pushes the food into the esophagus</li> </ul>			
Esophagus	It's a long muscular tube that moves the food down into the stomach.			
Stomach	It's a muscular organ that mixes the food with acidic and digestive juices (enzymes) until the food becomes a soupy liquid.			
Small intestine	It's an organ where nutrients from the food are absorbed through its walls.			
Large intestine	It's an organ that absorbs water from the undigested food to become solid waste.			
Anus	The solid waste leaves the body through it.			
Respiratory system	It is the system responsible for breathing (respiration).			
Respiration	It's the process of inhalation "pulling the air in" and exhalation "pushing the air out".			
Inhalation	It's the process of pulling the air in the body.			
Exhalation	ts the proof pushing the air out of the body			
Nose	It is the first organ of the respiratory system through which air enters the body.			
Trachea	t allows air to pus, to the two lungs and it is divided into two bronchi at its end.			



Two bronchi	They allow air to enter the two lungs and they are divided into smaler tubes that look like trees branches called branchioles			
Two lungs	They have two balloon shapes and they are responsible for a 15 exchange through a structure called the a veoli			
Alveoli	There are tiny air sacs surrounded by blood vessers where axuaen is transferred through them to the blood stream			
Diaphragm	It's a large muscle that has an important role during introlation and exhalation			
Oxygen	It's the gas needed for respiration for all living organisms			
Carbon dioxide	t's the gas expelled out of the body during respiration			
Gills	They re unique structures that a low fish to extract oxygen from water			
Air pollution (smog)	It's a type of pollution that makes it hard for humans to breathe.			
Water pollution	It's a type of pollution that makes it hard for humans to find clean drinking water.			
Soil pollution	It's a type of pollution that makes the crops not grow			
Amphibians	They're living organisms that live in moist (wet) environments as they can live on land or in water.			
Skin	It's a structure that allows amphibians to extract oxygen from water.			
Endangered species	They're the species that have a great loss in the numbers of their members.			
Extinction	It occurs when all members of one species die			

# Unit 1 Concept 2

Noctumal animals	They are animals that adapted to be active at night			
Echolocation	It's a property used by dolphins and bats to locate the prey in the dark.			
Echo	It's the reflection of sound waves back from a solid surface to the sound source.			
Egyptian mongooses	They're an mals that communicate by producing sounds that seem like chatter.			
Dolphin	It's a fish that use echolocation property to hunt in the dark water			
Owl	It's a bird that has a bowl-shaped face with feathers			
Nervous system	- It's the system that allows us to sense our surrounding environment.			
Brain	<ul> <li>It's the main control center in the human body.</li> <li>It's the organ that translates information and gives a suitable respond.</li> </ul>			
Spinal cord	It's a big nerve that passes through the backbone and is connected to the brain.			
Nerves	<ul> <li>They're branches extended all over the body parts that carry messages.</li> <li>They connect the components of the nervous system together</li> </ul>			
Sensory receptors	They're nerves found in the sensory organs and receive information from the surrounding environment.			
Jerboa	It's a desert roaent that has very large ears and long hind legs			
Reaction time	it's the time taken by a 1 . 11 ) organism to respond to danger			
Reflex actions	They're messages that are transmitted so fast that you are barely aware of them			
Human	A living organism that communicate by writing, speaking and reading			



Humpback whales	They're iving organisms that sing a wide range of musical tones to communicate.		
Ants	They communicate together using their sense of smell		
Nurse ants	They re ants that send strong smelly messages to scout ants if the food is low.		
Scout ants	They're ants that search for food and locate it		
Solider ants	They re ants that protect the colony from any nearby danger		
A blind person's cane	it's a special device used by a blind person to locate things nearby.		
Hearing sense	t's the sense used by bats to detect echo		
Touch sense	It's the sense used by a blind person to detect echo		
Smell sense	It's the sense used by ants to communicate		

## Unit 1 Concept 3

Light	It's the visible form of energy that is necessary for vision.			
Light source	It's the object that emits its own light.			
Moon	ts a shiny object in the sky that reflects the sunlight falling on it			
Eye	It's the organ that is affected by light and is responsible for eye sight.			
Night vision goggles	of fishing cats at night			
Eye pupil	It's a structure inside the eye that controls the amount of light that enters the eye.			
Fishing cat	It's a wild cat that has eyes that glow at night.			
Transparent materials	They are materials that allow light to pass through.			
Opaque materials	They or the state of the light to pass through.			

Smooth materials	They are mater als that reflect the light rays in one direction		
Rough materials	They are materials that diffuse the light rays in different directions.		
Light reflection	It is the bouncing of light rays when it falls on a reflecting surface		
Shadow	It's a tack area that is formed when light falls on an opaque object		
Firefles	It's a kind of beetles that I ght up the r wings to communicate		
Code	It is a pattern that has a meaning.		
Language	It's a code in the form of sounds.		
Writing	It's a code in the form of symbols or arranged letters.		

## Unit 2 Concept 1

Static object	It's the object that doesn't change its position.			
Moving object	It's the object that changes its position.			
Shockwave truck	It's the fastest truck in the world.			
Parachute	It's a tool used to decrease the speed of the Snockwave truck.			
Force	It's a push or pull that is applied on an object to move it.			
Motion	It's the change of the position of an object relative to a fixed point.			
Gravity	It's the force that pulls objects towards the Earth's center.			
Pushing force	It's the force used to move an object away from you.			
Pulling force	It's the force used to move an object towards you.			
Friction	<ul> <li>It's the force that arises when two objects rub against each other.</li> <li>It's the force that slows down a moving object until it stops.</li> </ul>			
Energy	It's the ability to do work or to make things happen.			
Work	It is the energy needed to move an object by applying a force on it.			



## Unit 2 Concept 2

It's the energy store for no star typic test gostion potential energy

It's the energy quarter product of the text in rection Kinetic energy

It's a device that charge is transferring patorietic

energy.

Motor

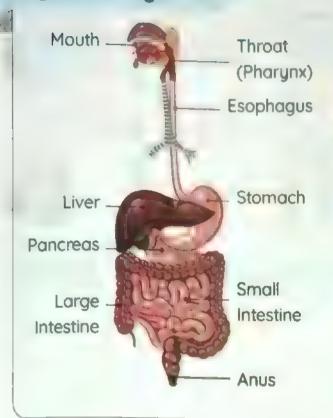
Chemical energy It's the energy stored in the first we real

## Unit 2 Concept 3

Collision	It's the moment when two moving objects crash			
Wrecking ball	It's a heavy steel ball swinging on a cable that is used by builders to knock down buildings			
Cricket	It's a popular game in which a player hits the ball with a wooden bat.			
Seatbelt	It's a safety equipment that keeps the driver's body from moving forward during a collision.			
Airbag	<ul> <li>It's a safety equipment that slows the speed of the driver from moving forward.</li> <li>It's a safety equipment that absorbs the energy of the car during a collision</li> </ul>			
Sensors	They tell the airbag to inflate and fill with gas to provide a soft cushion			
Speed	It is the distance traveled per a unit of time.  It's a measurement of how objects move fast or slow.			



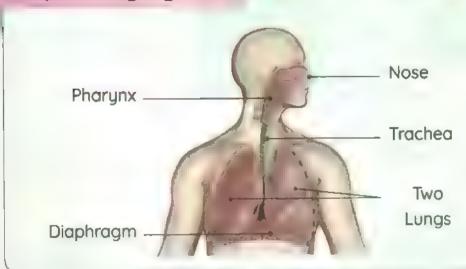
## **Digestive System**

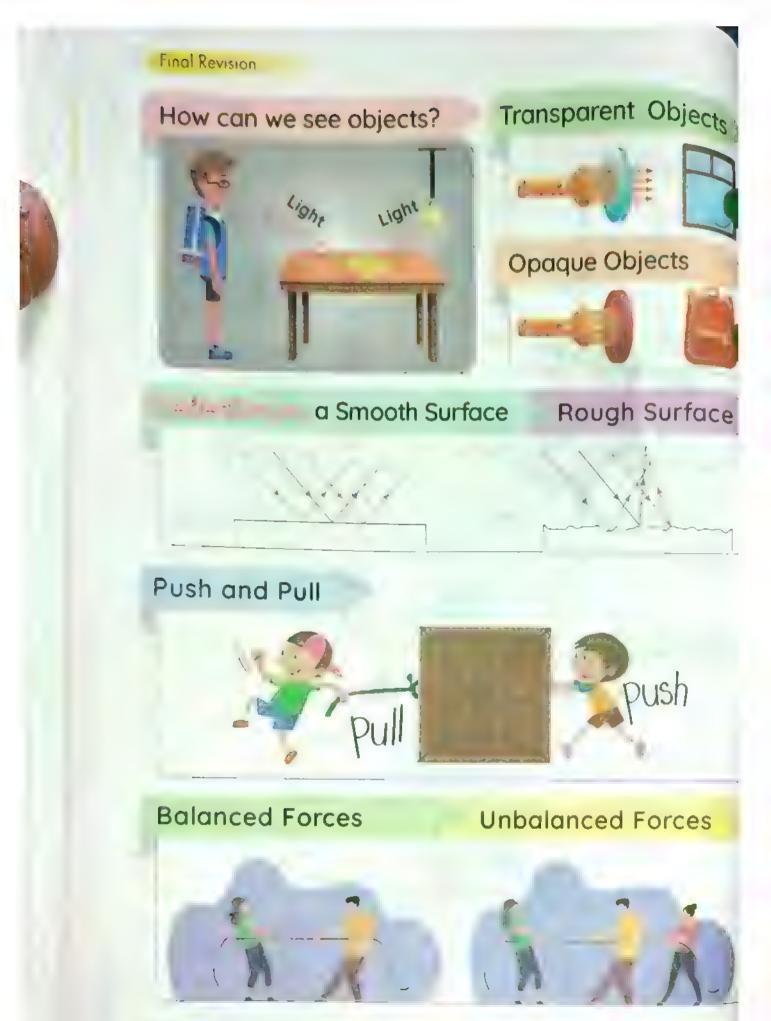


## Nervous System



## Respiratory System







# Give Reasons For...



# Unit 1 Concept 1

- A camel stores fats in its hump.
  - To adapt to the dry and hot desert environment.
- The starred agama lizard is always looking for shaded areas in the desert.
  - To keep its body cool during hot, sunny days.
- The pengens by da has a thick ager of fat and dense feathers.
  - · To keep its body warm in the extreme cold weather.
- The blood control in the pend in the tweater around each other.
  - · To keep its toes from freezing as the warm blood vessels heat up the cold blood vessels.
  - Some desert . I have colorful aches
    - · To hide among the colorful rocks in the desert.
  - A fennec fox has brown, tan-colored fur. To hide and blend in with the desert environment.
- A polar bear has white fur.
  - To hide and blend in with the snow.
- A polar bear has thick, heavy fur.
  - To keep its body warm in the cold weather.
  - 9 Brown pears and track bears have drik for
    - To hide among the trees in the forest.
- Some an mar the the bity to be carroliflage strategy
  - · To hide from their predators or to sneak up on the prey.
- An Arctic fox has short ears and legs.
  - To stay warm in the cold weather.
- A fennec fox has extra-large ears.
  - To lose heat and cool its body.
- A fennec fox uncergoes panting.
  - To cool its body.
  - 14 An Arctic fox has thick fur (coat).
    - To keep its body warm in extreme cold weather.
- III 15 The fur of the / 12 foxes white in writer and brown in summer
  - To sneak up on its prey in any season.
  - W Fennec foxe his ear. Eutrows during fay time
    - To stay cool during hot, sunny days in the desert.
  - (II) Arctic foxes hide in burrows at night.
    - To stay warm at cold nights.







- 18 Both fennec toxe and the total in the fifting
  - · Because it is hard to find food in the hot desert or the tundra desert
- (2) 19 Bull sharks have to competition for noting of the synter
  - · Because other types of sharks live in salt water only
  - 20 Bull sharks use a competitate estate estall for our to marking in hunting
    - To sneak up on its prey during hunting.
  - 21 The eyes of a pantine Chameleon move in the indirections)
    - Because the panther chameleon uses one eye to find food and the other eye to avoid danger.
- 22 A panther chame eon has V-snapea feet and a long to 1 with a hand snape
  - To hold the branches of trees tightly.
- 23 Acada trees have very rung roots that it is downwhat (taproot roots)
  - To get water from the deep soil.
  - 24 The branches of audoloities gather on the top of thirtink
    - To prevent animals from reaching their leaves.
  - 25 Acoca trees note that plant and it of each s
    - To prevent animals from eating their leaves.
  - 26 Acadia trees use will the property of the with other backs
    - To send smelly messages to nearby acacia trees to produce poison if there is danger nearby.
- 27 A kapok tre tarrange... R at that it is the inchick (buttress roots)
  - To fix the tree firmly in the soggy soil.
  - 28 A kapok tree has hand-shaped leaves.
    - To allow wind to move gently through its leaves without cutting them.
  - - To allow the snow to slide on it without breaking its branches.
- 30 Water lilles have wide floating leaves
  - To absorb a large amount of sunlight.
  - 31 Mangrove trees have long and strong roots
    - To resist the water waves.
  - 32 Palm trees have thick roots and small leaves.
    - To resist the strong winds.
  - 33 Barbary figs have sharp spines.
    - To prevent animals from eating their fruits and leaves.
  - 34. The human body is made up of direcant systems.
    - To perform different functions.

- 35 The human body needs energy.
  - To survive, grow and carry out vital processes.
- 36 1 1 of the removement of the
  - · Because teeth break down food into smaller pieces.
- 37 the trape of the many of the tender described
  - Because the tongue mixes the broken food with saliva.
- 38 near in much nation in vit wing tood
  - Because saliva moistens the food to facilitate its swallowing.
- 39 1 and of the analysis of the angesteric
  - To help in breaking down the food into nutrients.
- 40 he solete time is an important and insultar dige tive system
  - Because the nutrients are absorbed by the walls of the small intestine.
- 41 retar even a respectant organists down, as great
  - · Because it absorbs water from the undigested food and turns it to solid waste
- 42 Treamy on a antirement of the recommendation
  - Because solid waste can leave the body through it.
- 43 Areot are important for their plant as often
  - Because they are responsible for the gas exchange.
- 44 The inhaled an affers from the exhabit in
  - · Because the inhaled air is rich in oxygen gas, while the exhaled air is rich in carbon dioxide gas.
  - 45 The diaphragm pla, sar important rule in resepitation process
    - Because during inhalation, the diaphragm contracts and moves downward to increase the chest size, while during exhalation, the diaphragm relaxes and moves upward to decrease the chest size.
- 46 CH STATE . . .
  - Because they enable fish to breathe underwater.
  - 47 ( gr ( r) t.
    - Because they produce smog which causes damage to the lungs, asthma, and difficulty in breathing.
- 48 Frogs can live in water.
  - Because f ogs' skin can absorb oxygen gas from the water.
  - 49 The dry season is very harmful for amphibians
    - Because their skin must be wet all the time to extract oxygen gas from the water.
  - 50 Porty in it
    - Because they breathe oxygen gas from water and air
  - - To help them survive and protect them from extinction.
  - 54 Science Prim 4 First Term

## Unit 1 Concept 2

- 1 Some animals are let it to the
  - · These animals may live in an extreme hot habitat, so they prefer to hunt at night when the weather becomes cooler.
  - Some prey are available at night only
  - Some animals depend on the complete darkness to surprise their prey
- ? The Egyptian mongoose makes sounds
  - To communicate with other mongooses to move to another place to search for food.
- Owls can hunt during the night
  - Because they have extraordinary senses of hearing and sight
  - 4 Dogs can recognize their friends.
    - Because they have sharp senses of hearing and smell.
- 5 Dalphins use ech acada r province in the contraction of the contract
  - To locate their prey in the dark water.
- 🚇 6 Owls can otate (turn) thermouth, includections
  - To search for the prey everywhere.
- 7 Owls have bowl-shaped faces.
  - To pick up distant sounds and amplify them.
- 8. Owls have large eyes.
  - To see the tiny and far-away movements of the prey.
- - Because it is the main control center of the body that translates messages received from the environment and gives the muscles the suitable response
  - 10 1991 ... 1/2
    - Because they carry messages through the human body
  - II The Egyptian proportion in the first of
    - Because it has long, hind legs to jump for long distances.
  - 12 The presence of rose in the second     - To help it grip the sand during jumping in zigzag paths
  - - To detect even the quiet noise of a snake.

- 14 Humpback whater ing different songs.

  To communicate with each other in different seasons.
- 15 The minimum and amolly mespages to scout ants
  - To alert the scout ants that the food is low.
- To communicate with the other ants if there is a danger nearby.
- 17 The elbert in principle by the special cane of blind people is turned into vibrations.

To help the blind person to detect his surroundings using his touch sense

Because their special canes emit a high-pitched sound that humans' ears cannot hear.

- Because it has a mirror-like membrane on the back of its eyes which reflects the light rays that fall on it.
- 2 A candie is a numbered a source of light
  - · Because it emits its own light.
- 3 The moon search of high but it is not considered a source of light.

  Because the moon acts as a mirror that reflects the sunlight falling on it.
  - Mocturnal a in all can we tietter than humans at night

    Because nocturnal animals have bigger eyes and their pupils open wider than human.
- 5 The chad as I a trace body is formed when light falls on it Because the opaque body does not allow light to pass through.
  - 6 You can see a street placed behind a glass window

    Because glass is a transparent material that allows light to pass through
- To warn off their predators or to attract a mate.
  - 8 Firethe in a consequence to recommendes To light up their bodies and communicate with each other.



## 2 Concept 1

- 1 A jet auplane is faster than a normal truck
  - · Because a jet airplane has a more powerful engine than a normal truck
- 2 The Shockwave truck is faster than the normal truck
  - Because it is fitted with three jet engines.
- 3 Engineers installed three parachutes in the Shockwave truck designs
  - · To help the driver decrease the speed of the Shockwave truck quickly
- The static ball on the ground moves when you kick it
  - Due to the pushing force of your leg on it.
  - When two equal pushing forces act on an object in opposite directions, the object does not move.
    - Because the forces that affect the object are balanced, so the object doesn't move.
- 6 When you throw the ball up, it returns to the ground.
  - · Due to the gravity that pulls the ball down towards the Earth's center
- 7 When a car crashes into a wall, it will stop moving
  - Because the wall applied a force to the car that is equal to the force of the moving car, but in the opposite direction.
  - 8 When you stop pedaling during the movement of your bicycle, it slows down until it stops.
    - · Due to the friction force between the bicycle tires and the road.

- 1 The roller coaster doesn't need electricity during sliding down
  - Because the stored potential energy changes to kinetic energy
- 1 2 The speed of the roller coaster increases as it moves down the hill
  - · Because its kinetic energy increases.
  - 3) The goal net vibrates when a ball hits it.
    - Because the kinetic energy of the ball transfers to the goal net

#### Lord Revision

- (1) 4 The book on the table has energy
  - Because the book on the table stores potential energy.
- [ 1 5 where bullet thrown of word its poster his every processes.
  - · Because its height from the Earth Increases
  - 6 And to any produce different form of a ery)
    - Because \* produces light and thermal energies.
  - 2 On litting the toy car operated by a spring tracker incres
    - Because the potential energy in the spring changes to kinetic energy.

## Unit 2 Concept 3

- The special to bealt reason, it is at his it house
  - Because the kinetic energy of the bat transfers to the ball.
- 2 Seatbelts in cars are very important.
  - Because they keep the drivers' and passengers' bodies from moving forward when the car stops suddenly.
- 3. Airbags in cars are very important.
  - Because they slow down the speed of the driver or the passenger while moving forward and absorb the energy of the car during a collision.
  - 4. When two objects collide, you can hear a sound.
    - Because a part of the kinetic energy changes into sound energy.
  - 5 Driving fast is very dangerous
    - Because increasing the speed will increase the kinetic energy that results in exerting more force during a collision.
  - 6 A track need in the first to the terminal to move
    - Because the truck has more mass than the car.
- 1. 7 A truck consume transfer that that the compathy a small car
  - Because the truck has a bigger engine than the car.
  - 8 Amozog malane in the same speed.
    - Because the truck has a bigger mass than the small car.

# What Happens If...?



- (i) the same of Mallager on the body?
  - \* It cannot adapt to the cold weather and it will die
- not weave around each other?
  - The penguins' toes will freeze.
- 3) The polar bear has thin fur instead of thick fur?
  - It cannot adapt to the cold weather and it will die
- Q 4 North Mark than deal of white fir?
  - · It will not be able to hide from the prey, so it will die because it can't get foor
  - 5 white coat during all seasons of the year?
    - It cannot hide from its prey in summer, so it will die because it can't get food
- A fennec fox has short ears?
  - It will not be able to cool its body.
- An Arctic fox has long ears?
  - It will not be able to warm its body.
  - The sense of hearing becomes weak in foxes?
    - They cannot hunt their prey.
- 9 Property on area of salt water to an area of fresh water?
  - It will find less competition in finding food.
  - 10 I report to name con no ein le direction onu?
    - It cannot catch the prey or predators may hunt it.
  - A panther chameleon is exposed to danger?
    - It puffs up its body with air, opens its mouth wide and changes the color of its scales.
- - The roots cannot get water in the deep soil.
- 13 THE PARTY OF THE PROPERTY O
  - The kapok tree cannot stay firmly in the soggy soil.
  - A pine tree doesn't have a triangular shape?
    - The snow will break its branches.
  - 15) The trunk of a kapok tree becomes very short?
    - . The kapok tree won't get her and fed sonlight so it will are
  - 16 A water lify has narrow leaves instead of wide leaves?
    - It cannot absorb a large amount of sunlight.







- 17 A palm tree has thin it. if it is the
  - . It cannot resist the strong winds
- 18 A mangrove tree has a litary to the
  - · It cannot resist the waves of water
- 19 A barbary fig has no spines?
  - · Animals will eat It easily.
- 20 The smal atest to be the thirth a bit i
  - Nutrients will not be produced and the digestive system cannot perform its function
- 21 The naturents observed by a control the many vessels?
- · The blood carries these nutrients to all body parts.
- 22 The diaphragm moves aswinward during that itom?
  - · The chest size increases and the air rich in oxygen gas enters the lungs
- 23 The diaphragm moves upward during exhalation?
  - The chest size decreases and the air rich in carbon dioxide gas comes out of the lungs.
- 24 The exhausts from cars and factories increase in big a ties?
  - Smog increases causing breathing problems, damage of lungs, asthma, and heart diseases.
- 25 Water polition increases (followmans and fish)?
  - · Humans cannot find clean water to drink, and fish will die.
- 26 Water polition increases in the natura, hapitat of amphibians
  - The number of amphibians will decrease.
- 27 Amphibians do not have usig and breathe only through the
  - They will live only underwater.
- 28 Salamenders have lungs only to respire?
  - · Salamanders will live on land only.
- 29 The skin of frogs becomes dry?
  - They cannot survive and they will die.

- Dolphins have a weak sense of hearing?
  - Tregral of detect echo reflected from the prejuso the j will not be able to hunt in dark water.
  - 2 The sound waves produced by adapharation to the sound waves and the sound waves are sound to the sound waves and the sound waves are sound to the sound waves and the sound waves are sound to the sound waves and the sound waves are sound to the sound waves and the sound waves are sound to the sound waves and the sound waves are sound to the sound waves and the sound waves are sound to the sound waves and the sound waves are sound to the sound waves and the sound waves are sound to the sound waves and the sound waves are sound to the sound waves are sound to the sound waves and the sound waves are sound to the sound waves and the sound waves are sound to the sound waves and the sound waves are so that the sound waves are sound waves and the sound waves are so that the sound waves are sound waves and the sound waves are so that the sound waves are sound waves and the sound waves are so that the sound waves are sound waves are sound waves and the sound waves are sound waves are sound waves and the sound waves are sound waves and the sound waves are sound waves are sound waves and the sound waves are sound waves and the sound waves are so that the sound waves are sound waves are sound waves are sound waves and the sound waves are sound waves are sound waves are so that the sound waves are sound waves are sound waves are sound w
    - The sound waves will bounce back to the dolphin in the form of echo, so the dolphin can detect the location of the object.

- Bats have a weak sense of nearing?
  - \*They cannot detect the echo reflected from the prey, so they won't be able to hun
  - 4 Owls cannot turn the meade in all directions?
    - They cannot search for the prey everywhere
  - 5 Southand touches the spice of a cartus plant?
    - Your hand will move away quickly.
    - 6 The Ediptam Jerbou Francisco a a ake incompress to make the
      - It will hop in a zigzag path to escape quickly.
    - 7 The hearing sense of himplack whate, becomes weak?
      - They cannot communicate by songs using their hearing sense.
    - 8 The smell sense of units become woods.
      - They cannot communicate with each other.
  - ? The amount of food in the ant's color y become: cw (discrepted)?
    - The nurse ants will send a smelly message to the scout ants to alert them.
  - 10 There is a danger near an ait's color i,?
    - The solider ants will send smelly messages to alert the other ants.
    - 11 The high pitched sound that sproduced by the oing person's large in or object.
      - It bounces back to the cane in the form of ecno which is turned into vibrations,

- 1 The fishing cats eyes doesn that earning the near of ex
  - Fishing cats will not see well at night.
  - 2. The moon cannot reflect light?
    - It appears dark and we cannot see it.
- 1 Light fals on a transparent optimization of the strain o
  - Light will pass through the glass window.
- Light falls on an oparate and a line of
  - Light will not pass through it and a shadow will be formed
- 5. Light falls on a smooth surface (mirror)?
  - Light rays are reflected in the same direction.
- 6. Light falls on a rough surface (wood)?
  - Light rays are diffused in different directions.
  - 7. A firefly wants to attract a mate?
    - \* It produces a chemical reaction inside its body to light up.





- Another group of fireflies flashes nearby?
  - They will stop flashing their own pattern and start to mater the pattern of the other fireflies.
- The test's larger
  - The eyes send a message to the brain, then the brain giert jou to the proving

## Unit 2 Concept 1

- You kick a static ball on the ground?
  - · The ball will move due to the pushing force of your leg
- - It would move much faster.
- The Shockwave driver opens the parachutes?
  - The Shockwave will slow down gradually until it stops
- a fine puring force of the two teans are equal in the tug-of-war gan e?
  - The rope will not move.
- 👊 🖫 The puring force of the two teams are unpalanced in the tug-of war game?
  - •The rope will move towards the greater force.
- You let your book out of your hand?
  - The book will fall down due to the pulling force of gravity
  - 🐉 You push two sin arithy cars with a fferent forces on the ground?
    - The ball that is affected with a greater force will move a longer distance

## Unit 2 Concept 2

- (1) A roller coaster moves up the ramp?
  - The stored potential energy will increase.
- A roler coater in the change in energy?
  - · Its stored potential energy changes into kinetic energy
- An appreture of the change never justice that the change never justice.
  - The potential energy of the apple changes into kinetic energy
- (according to the potential energy)?
  - The stored potential energy will increase.
- You operate a wall rigit in a partner to lide of energy)?
  - The electrical energy changes into kinetic and sound energies
- You switch on an election of the strange of energy)?
  - The electrical energy changes into light and thermal energies

## Unit 2 Concept 3

- The moving bat hits a ball in cricket?
  - · The kinetic energy of the bat transfers to the ball
- 2 The airbags in a car don't inflate during a crash?
  - The driver will be pushed forward and get injured.
- 3 The speed of a car increases (according to the kinetic energy)?
  - The kinetic energy increases.
  - 4 Two cars moving in opposite directions collide?
    - The damage will be more severe.
  - 5 Two cars moving in the same direction collide?
    - The damage will be less severe.
  - A bike moving fast hits a person?
    - The person may get injured only and survive.
  - A car moving fast hits a person?
    - The person's life may be in danger.
  - 8 The pushing force acting on an object increases (according to the kinetic energy)?
    - The kinetic energy will increase.
  - The kinetic energy of a moving car increases (according to the damage of collision)?
    - The damage will be more severe.
  - 10 A truck and a small car move at the same speed (according to the kinetic energy)?
    - The kinetic energy of the truck will be greater than that of the car
  - 11 You increase the angle of inclination of a ramp where a bail is moving down it (according to the speed of the ball)?
    - The speed of the ball will increase.
- 12 Newton's cradle ball is raised up without leaving it (according to its energy)?
  - The ball will store potential energy.
- 13 You leave the bail of Newton's cradle move towards the rest of the balls (according to the change of energy)?
  - The potential energy changes into kinetic energy.
  - 14 Friction occurs between the string and the other parts of Ivewton's cradle during collision (according to the change of energi)?
    - Some of the kinetic energy changes into thermal energy



All questions in this final revision are derived from official sources, such as:

- Final governments' exams in 2022 and 2023
- Egyptian Knowledge Bank questions
- MOE Egypt Edu Stream



## Revision

66) Science Prim, 4 - First Term

## Concept 1.1

# Adarrenten er Suryiye

0	Choose the co	rrect answer;				
1	is one of the behavioral adaptations that help animals prote themselves from enemies.					
2	<ul><li>a Comouflage</li><li>Adaptations incl</li></ul>	b. Extinction ude changes that	c. Migration in the	d.Repi environmei	roductiont.	
3	a. reduce chance c. improve spectiments adaptated	es of survival	b. reduce life : d. reduce repr		- 1	
	a. It's the proces b. It's a property c. It's a form of d. It's the proces What happens t	ss by which new sign possessed by living possessed by living pollination for trees of getting rid of the organisms the control of the organisms the second policy.	ng things to hel s. barmful substan	acae na lavia	م الم	
	a. The population	n stays constant.	b. Surviving d. The populatinguin's feet throu	ion increas	es.	
	A penguin is one a reptiles A polar climate	of the	c. head	d. feathe	ers	
	c. looks like a de	place on Earth	b. is the coldest d. looks like a fo			
•	cool the fox.	of a fenne	c fox allow(s) he	eat to escap	pe and	
9		thick white fur is a	b. polar bears	d. eyes		
	A panther chame a. eyes	eleon uses its  b. tail ons puff up (blow)	d. forest bears like a hand. c. head their bodies with	d. ears	their	
	a. play with	b	C. sleep	d. scare	their	

12	cover(s	) the body of Arctic	c foxes.					
	a. Heavy hair	b. Thin fur	c Many feathers	d. Thick fur				
13	pant to lower their bodies temperature.							
		b. Foxes		d. Bats				
14	Animals that live	in a hot environm	nert tole	ear to allow				
	heat to escape of	ind be cool						
	a. small	b. short	c.long	d. sharp				
15	Which of the follo	owing is an examp	in of come of sign	<i>)</i>				
	a. A camel's bro	ad feet	b. A camel's hum	p				
	c. Powerful parr	ot wings	d. A fox's brown to	fur				
16	An eagle is a kind of bird that eats meat its beak is strong and sharp							
	This structural ac	daptation helps it to	0					
	a. rip meat	b. see	<b>c</b> . escape	<b>d</b> , find a shelter				
17		in both fresh and						
	a. Polar Bears	b. Bull Sharks	c. Dolphins	d. Penguins				
18	puff up	(blow) their bodie	s with air to scare	their enemies				
	a. Bats		<b>b</b> . Snakes					
	c. Panther chameleons		d. Agama lizards					
19	Bull sharks can l	ive in						
	a. fresh water only		b. seas and mud					
	c. rivers, seas, and oceans  d. salt water only  One of the structural adaptations of water kily is that it has							
20	One of the struc	tural adaptations of	of water lily is that	t it has				
	a long roots	b. sharp spines	c. tiny leaves	a. wide leaves				
21	The tree that sto	ores water in its tru		e.				
	a. kapok	b. acacia		<b>d.</b> water lily				
22	Both of acacia t	rees and kapok tre		e d touble				
	a. habitat		c. roots	d. trunk				
23	The roots of pal	m plants help then	n to	larara, ad water				
	a stand strong	against the wind	d. ell the proviou	is answers				
	c. stay steady in the soil d. all the previous answers  14 In the process of respiration (inhalation), gas enters the lungs.							
2		respiration (innoi	<b>c</b> . nitrogen	d hudrogen				
	a oxygen			d, rigaroger.				
2		ns inside the huma		d a few minutes				
a many hours b many days c. a few seconds d.a few minutes								
26 Stomach is a part of the digestive system that a. chews food b. converts solid food into I								
		ents from the food	d. delivers food into the esophagus					
	C. GD301D3 110[[1	CHES HOTTI THE 1000	a. denvers 1000 ii					



27 Digestion of food starts in the							
a esophagus b. lungs	c. mouth	d. stomach					
28 The long winding tube that is m		long is called					
a small intestine b esophagu		rine d. stomach					
29 All the following are components	s of the digestive sy	ystem, except					
a. lungs	b. stomach						
C. small intestine	d. large intest						
30 The esophagus is part of the di	at						
a chews the food	<b>b</b> . transfers fo	od to the stomach					
absorbs nutrients from food	<b>d</b> . transfers ai	r to the lungs					
31 Fish extracts oxygen from water a. skin b. gills							
a. giiis	c. lungs	d. fins					
Complete the following sent the brackets:							
The fat layer under the animal's adaptation	skin in order to w	arm it is a					
1	(ctru)	stured balas					
Color for Scales in desert lizards is considered							
- Producti.							
3 A burrow is an excellent place fo	tay during						
		(warm - cool)					
4 Mangrove trees grow in	(fresh	,					
5 The cactus plant has spines that protect it from being eaten by desert animals, and this is considered a form of							
6 The leaves of trees look li	ke your band	(tural adaptation)					
7 Your mix and grind the food inside your mouth.							
	£2 .1						
. is a tube with muscles tha	t pushes the food i	nto the stomach					
9 During out alas	(Irach	lea - Esophague)					
gas cor	nes out of the lung	IS					
10 The human body uses the	(oxygen -	carbon dioxide)					
	system to get nutr	ients from food					
11 The lungs are one of the important organs in the sustem							
The lungs are one of the importan	it organs in the						
	it organs in the	system					
	it organs in the	system					
12 The process of pulling air in and p  68 Science Prim. 4 - First Term	respira (respira ushing air out of th	system					



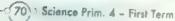
	13	The diaphragm rises up during	1 1	13
		Fish breathe gas which is dissolved in water		
		(oxygen - carbon dio	xid	e)
	15	destroys the lungs and causes many diseases		
		(Breathing - Air pollu	tio	n)
9		Put $(\checkmark)$ or $(x)$ :		
6	1	Adaptation is the change of the structure or behavior of an		
	•	organism's body to survive.	(	)
	2	Foxes have a strong sense of hearing.	(	5
		Polar bears have extra-large ears to lose heat	(	)
		Fennec foxes live in deserts, while caracals live in forests	(	<u>,</u>
		Fennec foxes feed on fruits only.		1
		The feet of the penguin do not freeze because they have a layer		
	0	of fat.	,	7
	7	The body of a polar bear is covered with thick fur.	(	)
		Black bears have dark fur to hide among trees.	1	1
		The fur that some animals possess to protect them from the col-	l d	/
	7	is a behavioral adaptation.	1	٦
	10	The migration of birds to search for food is considered a behavior	ora	1
	10	adaptation.	(	)
	11	Some animals that live in cold climates have long ears to help th	ien	<b>,</b>
	11	maintain their body temperature.	(	)
	12	Animals digging trenches is a form of structural adaptation.	(	)
		Animals can't eat barbary figs because of their sharp spines.	(	)
		Plants have two types of adaptation, structural and behavioral.	(	)
		Plants need long roots that extend deep into the soil to survive		
	10	in the water scarcity.	(	)
	16	Sending a smelly message through acacia trees is a beha	VIO	ral
		adaptation.	(	)
	17	Acacia trees grow in the Amazon forest.	(	)
		The needle leaves of pine trees help them lose water.	(	)
		All living organisms need food and oxygen gas to get energy.	(	)
		A pharynx is a common cavity between the digestive and the		
		respiratory systems.	(	)
	21	Food is turned from a simple form into a complex one in digestion.	(	)
		Your teeth crushes food inside your mouth during chewing.	(	)
		TOOL LOCKING CONTROL OF STREET	•	_

2	3 The absorption of the agested food takes place in the stoma	ich.	(
2	4 The large into the all all bs nutrients from the waste.		(
2	5 The food passe through the large intestine before it goes to		
	the small intestine.	(	
2	6 The respiratory of terminal esponsible for the entry of air into		
	the body.	(	,
27	When running and making an effort, the number of breathing		
	times decreases.	(	)
28	During exhalation, the diaphragm moves upward and relaxes	(	)
	Carbon a ox ae gas simportant for the respiration of animals.	(	)
30	Exhaled air is loaded with oxygen.	(	1
31	Adult frogs breathe using their gills.	(	)
32	Amphibians include frogs and salamanders.	1	1
JJ	Frogs are reptiles, while panther chameleons are amphibians.	(	7
34	man cannot restore the ecosustem in any way	(	7
35	Water pollution offects fish, but doesn't affect humans or plants.		J
		-	1

## 0

### Write the scientific term:

- 1 It's the change in a living organism's body or its behavior to be able to survive in its environment.
- 2 It's a type of adaptation in which the living organism blend in with the surroundings to hide from its prey or predator.
- 3 It's a change in the structure of the living organism's body to cope with its environment conditions.
- 4 It's a strategy of camouf,age that helps the bull shark sneak up on its prey.
- 5 It's the , locess of breaking down food into nutrients to get energy.
- 6 It's a muscle that has an important role in the respiration process.
- 7 They're living organisms that live in a moist environment and have two ways of respiration.
- 8 It's the structure that heigs fish to respire underwater
- 9 They're air sacs surrounded by blood vessels in the respiratory system.
- 10 It's a bird that has weaved blood vessels in its feet and toes









## Complete the following sentences using the words between the brackets:

- 1 (Respiration Water lily buttress roots)
  - a. The \_\_\_\_\_ has wide floating leaves.
  - b. Includes inhalation and exhalation processes
  - c A kapok tree has to fix it in the saggy soil
- 2 (penguins Arctic foxes bull shark Fennec foxes)
  - a. pant to lower their bodies temperature
  - b and are from the animals that can live in the cold weather.
  - c. A ... can sneak up on its prey using countershading



#### Choose from column (A) what suits it in column (B):



#### Column (A)

- 1 Acacia trees
- 2 Amphibians as frogs
- 3 Alveoli
- 4 Bull sharks

#### Column (B)

- a. absorb oxygen directly from water through their skin.
- b. are little air sacs found in the lungs.
- c. use a camouflage strategy called countershading.
- d. use wind to send a smelly message.

## Column (A)

- 1 An Arctic fox
- 2 A bull shark
- 3 A kapok tree
- 4 A water lily
- 5 A mangrove tree

#### Column (B)

- a. has hand-shaped leaves.
- b. lives in fresh water only.
- c. has short ears and legs
- d. lives in salt water only.
- e. lives in fresh water and salt water

1

2

3

4

5



#### Column (A)

- A gas that is necessary for respiration.
- It's a process of pushing air into the body and outside it.
- A gas produced from respiration.

#### Column (B)

- a.Carbon dioxide gas
- b. Respiration
- c.Oxygen gas









#### Column (A)

- Pharynx
- Camouflage
- Esophagus
- Diaphragm

#### Column (B)

- a.connects the throat to the stomach.
- b is a type of adaptation that helps an animal to hide.
- c. is a common organ in the digestive and respiratory systems.
- d is a muscle that plays an important role in breathing (respiration).



#### Cross out the odd word:

- 1 Camel Fennec fox Arctic fox Agama lizard
- 2 Penguin Polar bear Agama lizard Arctic fox
- 3 Lungs Alveoli Gills Diaphragm
- Saliva Stomach Esophagus Small intestine



# Classify the type of adaptation by putting the letter (S) for structural adaptations and the letter (S) for behavioral adaptations:

- Producing poison in acacia trees.
- 2 Panting in fennec foxes.
- 3 The tan-colored fur of a fennec fox.
- 4 A chameleon can move each eye in a different direction.
- 5 Rabbits have long and strong hind legs that help them jump quickly and escape in dangerous times.
- 6 Some plants have spines to defend themselves against enemies.







Answer the following questions:	
on, this phenomenon is called	or of the tree it lives
Study the opposite two figures Identify the name of each of the two processes in figures A and B:  a.Figure A:  b Figure B:  c What happens to the diaphragm in figure (A)?	, i
The sustem that dignets 6	
The system that digests food to produce energy is	the
Chameleons can move each of their eyes in a diff	erent direction, this
adaptation helps them	t the state of
Some dogs live in a cold environment, while some live i	n a hot environment.
In your opinion, which one has thick fur, the one	s living in the cold
environment or the hot environment? And why?	
The leaves of plants that float above the surface wide that they can	of the water are so
Animals that have a thick layer of fat under their sk	in are animals that
live in a environment	
Mention one animal and one plant that live in rainf	orests.
Give a reason for:	
Polar bears have thick fur.	
~ · · · · · · · · · · · · · · · · · · ·	
What happens if:	
The diaphragm contracts and moves downward?	
MAN A THE MINE MP II P A ME II P	

## Revision

# Concept 1.2

# Stantast of Works

Choose the correct answer		
1 The system helps us to from our surroundings.	translate messag	es (stimuli) that come
a respiratory b. digestive	c. circulator	d. nervous
2 Which of the following carry		
brain when you see something		0 - 0[
a. Nerves b. Muscles		d. Glands
3 Your sensation of hot weather your	depends on the s	ensory receptors in
a. eyes b. skin	c. nose	d. ears
Bats become active		
a. In the morning b. at noon	c. at night	d. all day
5 A dolphin depends on to l	ocate its prey and	objects underwater
a. its memory	b. its sense o	
c. echolocation	d. its sense o	
6 Your is the sensory o	rgan for seeing ob	jects
b. tongue	c. nose	d. eues
7 When you determine a sweet of	or bitter taste, you	use your
a. tongue b. eyes	c. ears	d. nose
8 All the following are componen the	ts of the nervous :	system, except
9 A bat is a animal.	c. nerves	d. brain
a. nocturnal b. morning	c. non-flying	d. diurnal
10 A/An is characterized directions.	by the ability to	move its head in all
a. panther chameleon	b. jerboa	
c. human	d. owl	
11 The is the main contro	ol center in your bo	ody.
a. stomach b. brain	c. lung	d. liver
12 To detect the place of a table depend on your sense of	in a completely d	ark room, you can
a. sight b. touch	c. taste	d. hearing
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13	When your eyes	see a red traffic	light, that's a sign	nal to
	a increase your	speed	decrease yo	ur speed
	c. keep your spe	eed as it is	d. stop instantl	y
14	The organ that is	s responsible for	the sense of sight	t is the
	a. ear		c. nose	
15		to get info	imation about th	eir surroundings in
	the dark			
	a. eyes	b. tongue	c. ears .	d. hands
16	When an object	comes close to yo	our eyes suddenig	occur(s)
	a. a reflex action	3	b. a fast respon	nse
	c. a slow respon	ise	d. a and b	
17	Reading and wi	riting are commi	on types of com	imunication in the
	world.			
	a, animals'	b. plants'	c. humans'	d. birds'
18	Animals can con	nmunicate with e	ach other through	1
	a. sound and lig	ht	b, talking	
	c. reading		d. writing	
19	Humpback whal	les use singing to		
	a, heat themselv	•	b. hide from en	emies
	c. communicate		d have fun	. I i the motion
20	Humpback wha	les sing during	months, v	which is the mating
	season.		•	-l autumn
	a. winter	b. summer	spring	d. autumn
	Complete the f	following sente	nces using the	words bet ween
	the brackets:			, al
1			ceive information	
				n - response time)
2			an escape from it	ts enemies
	because of the l	ength of its hind I	egs.	the norman
3	The eyes send r	nessages to the	- Interent	ine herves.
		110304900 10 111		
			(t	orain - Sp., a. cora)
4	A dolpnin can lo	cate its prey throu	gh its sense of	orain - sp.na. cora)
5	A dolpnin can loo There's an integ	cate its prey throu ration between o	(t) gh its sense of ur senses and the	system to
5	A dolpnin can loo There's an integ interact with the	cate its prey throu ration between o surroundings.	(t) gh its sense of ur senses and the	system to piratory - nervous)

	7 Sensory receptors send messages from		
	(the brain to the muscles - the sensory organs to	the	brain
	The echolocation feature depends on the		
	(hearing sense - sig	iht s	ensa
1	The skin is an important organ of the system.		
	. (respiratory -	ner	vous
1	The . passes through the human's backbone. (spinal cor	d - k	orain
)	The echo is turned into vibrations in the that is/are	USE	ed b
	blind people. (goggle:	s - c	ane
U	sing underwater to communicate with each other.		
31	(Bull sharks -	Wh	ales
1 die	The winter months are considered the season for hu whales.	mpl	back
	(mating -	feed	dina
-	Humpback whales and dolphins communicate by their	_ Se	ense
75	A group of ants sound	] - S	ight)
	A group of ants send a message to communicate w	ith e	each
76	communicate using their sense of smell. (visual -	sm	elly)
	their sense of smell.		
3	Put $(\checkmark)$ or $(x)$ : (Dolphins	s - A	nts)
3	Put $(\checkmark)$ or $(x)$ :  The ear is the organ that detects the sound waves produced.	6 - A	nts)
1	Put $(\checkmark)$ or $(x)$ :  The ear is the organ that detects the sound waves produced from a radio.	S - A	nts)
2	Put ( / ) or ( x ):  The ear is the organ that detects the sound waves produced from a radio.  The brain is responsible for processing information	S - A	ints)
2 3	Put ( / ) or ( x ):  The ear is the organ that detects the sound waves produced from a radio.  The brain is responsible for processing information  Bats use their sense of smell to avoid dangers	6 - A	) )
4	Put ( / ) or ( x ):  The ear is the organ that detects the sound waves produced from a radio.  The brain is responsible for processing information  Bats use their sense of smell to avoid dangers.  Humans have a stronger sense of hearing than dolphins	( ( ( (	) ) ) )
2 3 4 5	Put ( /) or ( x):  The ear is the organ that detects the sound waves produced from a radio.  The brain is responsible for processing information  Bats use their sense of smell to avoid dangers.  Humans have a stronger sense of hearing than dolphins.  A person can identify the spoiled food through his/her sense.	( ( ( (	) ) )
4	Put ( /) or ( x):  The ear is the organ that detects the sound waves produced from a radio.  The brain is responsible for processing information  Bats use their sense of smell to avoid dangers.  Humans have a stronger sense of hearing than dolphins.  A person can identify the spoiled food through his/her sense of hearing.	( ( ( (	) ) ) )
4	Put ( /) or ( x):  The ear is the organ that detects the sound waves produced from a radio.  The brain is responsible for processing information  Bats use their sense of smell to avoid dangers.  Humans have a stronger sense of hearing than dolphins.  A person can identify the spoiled food through his/her sense of hearing.  Ants can know the sweet taste by their sense of smell	S - A	) ) ) )
4	Put (/) or (x):  The ear is the organ that detects the sound waves produced from a radio.  The brain is responsible for processing information  Bats use their sense of smell to avoid dangers.  Humans have a stronger sense of hearing than dolphins.  A person can identify the spoiled food through his/her sense of hearing.  Ants can know the sweet taste by their sense of smell  The nervous system works separately from the five senses	S - A	) ) ) ) )
5 6 7	Put (/) or (x):  The ear is the organ that detects the sound waves produced from a radio.  The brain is responsible for processing information  Bats use their sense of smell to avoid dangers.  Humans have a stronger sense of hearing than dolphins.  A person can identify the spoiled food through his/her sense of hearing.  Ants can know the sweet taste by their sense of smell  The nervous system works separately from the five senses.  The sensory receptors in your nose receive the scent of a delicious pizza.		) ) ) ) ) )
5 6 7	Put ( /) or ( x):  The ear is the organ that detects the sound waves produced from a radio.  The brain is responsible for processing information  Bats use their sense of smell to avoid dangers.  Humans have a stronger sense of hearing than dolphins.  A person can identify the spoiled food through his/her sense of hearing.  Ants can know the sweet taste by their sense of smell  The nervous system works separately from the five senses.  The sensory receptors in your nose receive the scent of a delicious pizza.  The skin is the sensory organ that makes you feet the smoother.		) ) ) ) ) )
5 6 7 8	Put ( ) or ( x):  The ear is the organ that detects the sound waves produced from a radio.  The brain is responsible for processing information Bats use their sense of smell to avoid dangers.  Humans have a stronger sense of hearing than dolphins.  A person can identify the spoiled food through his/her sense of hearing.  Ants can know the sweet taste by their sense of smell  The nervous system works separately from the five senses.  The sensory receptors in your nose receive the scent of a delicious pizza.  The skin is the sensory organ that makes you feel the smoothned of the cloth.	( ( ( ( ( ess	) ) ) ) ) )
5 6 7 8 9	Put ( /) or ( x):  The ear is the organ that detects the sound waves produced from a radio.  The brain is responsible for processing information  Bats use their sense of smell to avoid dangers.  Humans have a stronger sense of hearing than dolphins.  A person can identify the spoiled food through his/her sense of hearing.  Ants can know the sweet taste by their sense of smell  The nervous system works separately from the five senses.  The sensory receptors in your nose receive the scent of a delicious pizza.  The skin is the sensory organ that makes you feet the smoother.	( ( ( ( ( ess	) ) ) ) ) ) ) )

11	Both owls and panther chameleons have a sharp sense of hearing.	1	1
12	The jerboa is a rodent that can be found at the same habitat of	( +	ha
	caracal.	/	110
13	Dolphins have a strong sight sense.		)
14	Soldier ants send a small was	4	)
15	Soldier ants send a smelly message in case of a shortage of food	(	)
14	Echo helps dolphins locate their prey in air  The reaction time of a live	(	) ~d
10	The reaction time of a living organism must be less than one set to escape from any danger.	COI	10
17		(	7
	The reflexes are fast messages you are barely aware of	(	)
	Eyes are considered sensory organs of light, not sources of light	(	)
19	Humpback whales change their sound pitch according to the sec	OSC /	on.
		(	)
	Humpback whales can sing underwater.	(	)
21	Humpback whales communicate with each other through flashing.	(	)
22	Animals can use more than one sense to communicate.	(	)
23	Scout ants are responsible for alarming the colony in danger.	(	)
24	Bats use their ears to "see" in the dark.	(	)
	Write the scientific term:		
1	It's the main control center of the human body.		
2	It's a property by which a bat can locate its prey insects throug	h t	he
	sound reflected from them.		
3	They're animals that are active at night.		
4	They are nerves found in the sensory organs to receive inform	atı	on
	from the surroundings.		
5	It's the time taken by a living organism to respond to a danger		
6	It's the system that is responsible for the reflex actions		
7	It's a desert rodent that has large ears and long, hind legs.		
8	Ants that are responsible for finding food.		
9	Ants that send smelly messages to scope arits when lood is low		
1	Olt's the sense used to differentiate between smooth and rough surf	ace	es.
1	1 They're messages that are transmitted so fast that you are be	are	ely

aware of them.



#### Cross out the odd word:

- 1 Taste Smell Hearing Eyes
- 2 Reading Writing Echolocation Language
- 3 Bats Ants A plind person's cane Dolphins



#### Choose from column (A) what suits it in column (B):



#### Column (A)

#### Column (B)

- 1 A jerboa
- in depends on echolocation to find its prey
- 2 An owl
- depends on its hind legs to jump in a zigzag path.
- 3 A bat
- is an animal that has a bowl-like face



3

2

#### Column (B)

1 It is similar in its processing of information to a computer.

Column (A)

- a the spinal cord.
- 2 They carry messages from the brain to all body parts and vice versa.
- b. reaction time.
- 3 When a strange object approaches your eyes,
- c. The brain
- 4 The time taken by a living organism to react is
- Nerves
- 5 A bundle of nerves that passes through the backbone is
- the reflex action occurs.



#### . What happens if:

- 1 Your foot touches a nail on the ground?
- 2 The hind legs of a jerboa are short?

## Answer the following questions:

- 1 A dolphin can locate living organisms and things under the surface of the water, exp ain the feature that helps the dolphin to do so.
- 2 Rabbits have strong and long hind legs that help them jump quickly and escape in dangerous times. Determine the type of adaptation.

## Revision

# Concept 1.3

Choose the cor	rect answer		
energy of	fects the sensory	receptors in the e	yes, causing
vision.			
a. Sound	b. Kinetic	c. Light	d. Magnetic
2 The organ respon	nsible for the sens	se of sight is the $\_$	
a. ears	b. tongue	c. nose	d. eyes
3 Each of the follow	ving is con <mark>sidered</mark>	d a source of light,	except
a. fire	b. the Sun	c. the lamp	d. the eye
4 Which of the follo	wing is a source	of light?	
a. The moon	b. Our eyes	c. Fire	d. Mirror
5 The eyes of noct	urnal animals are	the humar	n eye.
a. smaller than	b bigger than	c. the same as	d narrower than
Both fishing cats			
a. can swim		b. are nocturnal of	
c. can fly		d. can rotate thei	r eyes
7 Humans have	eyes than n	octurnal animals.	
a. bigger	b. smaller	c. stronger	d. sharper
8 The pupils of no	cturnal and	oen human	s' pupils.
a wider than	b. similar to	c narrower than	d. shorter than
The eyes of	glow in the da	rk.	1 1
a. bats	b. cats	c. penguins	
10 What feature of	light helps you se	e yourself in the m	irror?
a. Refraction	b Ray length	c Shortness	d. Reflection
11. Light travels in		,	d. circular
	b. straight		
12 Which of the fo	llowing material d	ioes not form a sni	ddow when light
falls on it?	<b>b.</b> Glass	c. Carton	d. Tree
a. Wood	D. Gluss		Prim. 4 - First Term (79)

13 Which of the following allows lig	ht to pass through	n it?
a. Rock b. The moon		
14 A mirror makes the falling light r	ays	
a pass through it	h reflect in dif	ferent directions
c reflect in the same direction	d. diffuse like th	at of rough surfa
15/ Ure considered from tr	ansparent objects	S
d. Metals b. Lenses	c. Mirrors	d. Wood
All the following are transparent	materials, except.	
b, air	c. paper	d. lenses
The following materials are	opaque except	
b. the human bo	duc water	d. iron
and a dark surface	٥	
the surface absorbs the light	h light passes to	hrough it
and it is religious	d nothing happ	one
and is flot a bird, but it is a tur	ne of	
a amphibians b. lizards  20 Changing the pattern of the term	c. beetles	d. reptiles
20 Changing the pattern of lighting u adaptation(s)	p in a firefly is an e	example of
a. structural and behavioral		
c. structural	1 3-10-1 0110 2	
21 produce a chemical i	d. behavioral	
a. Butterflies	b. Fireflies	r bodies.
c. Houseflies	d Owle	
22 Raising your thumb up or lowering a. colors	it down is a kind a	√f
	b. codes	
C. waves	d. lights	
the brackets:	200	
the brackets:	ces using the wo	irds between
1 The eye pupils of owls open .	than the eye pur	allo of h
		rower - wider)
is from the sources of light.		e moon - Fire)
80 - Science Prim 4 - First Term		

	3 Air and water are materials and you can see things t	hrou	gh
	them. ' (transparent - o	paqu	e)
	Smooth surfaces reflect light in direction(s)		
	(the same - di	fere	nt)
	5 Light does not pass through matter (transparent - o	paqı	ie)
	6 is from the opaque objects (Carton	Gla	55)
	When light is scattered from a surface in different directions, t	his	
	surface is (rough - s		th)
	The different languages are considered as (codes	- ligh	ts)
1	Put (✓) or (X):		
8	Both humans and animals need a light source to see.	(	)
	2 The human eyes can see in the dark clearly.	(	)
	Humans can see in dim light better than in bright light.	(	)
	The moon is considered a light source.	(	)
	3 All nocturnal animals have excellent night vision.	(	)
	16 Nocturnal animals have eyes that are bigger than the human	eyes	Š.
		(	)
	7 Some animals can see clearly at night, such as a wild cats.	(	)
	The fishing cat can't hunt in the dark.	(	)
	9 Cats have excellent night vision, while bats don't.	(	)
	10 Wood is a transparent object that allows light to pass through	it. (	)
	11 The wooden board reflects less light than the mirror.	(	)
	12 The opaque materials do not let the light pass through.	(	)
	43 Shadow is formed when light hits a transparent object.	(	)
	14 Polished surfaces, as mirrors, reflect light rays in the same dire	,	
	The light reflection depends on the smoothness of the chiests's		)
	The light reflection depends on the smoothness of the objects's	(	)
	16 If I can see my face clearly on a surface, this means that it is		
	a smooth, shiny surface.	(	)

17	A written language helps people communicate.	( ,
18	Fireflies can communicate with each other using sound energy.	(
	Humans use light to communicate, such as using traffic lights.	
	In order for the code to be translated, the brain must identify it.	J
	Red and green traffic lights are codes.	( )

## 0

#### Write the scientific term:

- 1 It's the visible form of energy that travels in the form of waves.
- 2 It's the organ that is affected by light and is responsible for sight.
- 3 They're objects that emit their own light.
- It's a tool used by people, and it works as the eyes of fishing cats at night
- 5 It's a type of wild cat that has eyes that glow at night.
- 6 They're materials that allow light to pass through.
- 7 They're materials that don't allow light to pass through.
- 8 They are materials that reflect the light rays in one direction.
- 9 They are materials that diffuse light in different directions.

#### Cross out the odd word:

- Lenses Air Brick Water
- 2 Sun Moon Fire Candle
- 3) Wood Glass cup Book Wall
- A Paper Wood Cloth Mirror



## Classify the following materials into transparent and opaque materials:

1 A chair made of wood:	2 An aluminum pot:
3il Air	Glasses of glass:



Classify the following materials into transprirent and opaque materials:

(Rock - Glass - Window)



#### Classify the following materials into smooth and rough materials:

(Mirror - Cloth - Metal - Wood)



#### Choose from column (A) what suits it in column (B):



#### Column (A)

- 1 The Sun
- 2 Shadow
- The moon
- 4 Smooth surfaces

#### Column (B)

- a. reflect light rays in one direction
- b. is formed when the light strikes a human body.
- c. is a source of light.
- d. is shiny but is not considered a source of energy.











#### Column (A)

- 1 Sight
- 2 Light
- 3 The mirror-like membrane

#### Column (B)

- a. is the visible form of energy that is transmitted in the form of waves.
- b. is a structural adaptation in the eyes that provides some animals with better vision at night
- c. is the sense that helps us see.









#### Column (A)

- 1 Rough surfaces
- 2 Light travels in
- 3 Whatching TV
- Fireflies

#### Column (B)

- a. is a type of communication for humans only.
- b. light up their wings to attract a mate.
- c. diffuse light in different directions.
- d. straight lines.









Look at the path of the light rays	s in pictures (A)	and (B)
- Determine which of the two objects opaque and which is transparent  (A):		8
Which of the following surfaces of light rays from wood and wha		reflection



#### Your friend wants to prevent the light from entering his room.

Suggest him some materials that he can use on the window to prevent the light from entering his room.

#### Give reasons for:

- 1 The moon is not considered a source of light.
- A candle is considered a source of light.
- 3 Nocturnal animals can see better than humans at night.
- A cat's eyes glow in the dark.
- The eyes of humans do not glow like cats in the dark.
- You can see an object placed behind a glass cup.
- (7) A shadow is formed when light falls on an opaque object.
- None of the light energy passes through the opaque objects.

### What happens if:

- Light falls on a book?
- Light falls on a rough surface?



# Revision

## Concept 2.1

## Starting and Storping

Choose the cor			
When an object I	s in motion, this n	neans that its	changes
a. color	b. shape	c. size	d. position
	something towar	ds you, this repres	sents
/am	b. light energy		d. sound energy
3 When you sit on			and holding
you on the chair			
a. pulling you up	ward	<b>b</b> . pulling you do	wnward
c. pushing you u		d. pushing you d	lownward
Push or pull actio		d types of	
a. forces	b. devices	c. energies	d. adaptations
The force that pu	Ils the objects do	wn towards the ce	enter of the Earth
is force			
a. gravity	b. pushing	c. air	d. wind
6 The force that of	ccurs when an ob	ject rubs against	another object is
calledf			,
a. pull	b. push	c. gravity	d. friction
7 You can see the	movement of al	I the following ob	jects, except the
movement of	Total Programmy School-Aller Annual Strate and the eff of the School Annual Strate School Annual Sch		
a. a flying airpla	ne	b. a running hors	
c. sea waves		d. the planet Ear	
(8) The force that slo			
a. push	J J	c. friction	d. pull
	bility to do work.	a Duch	d. Pull
a. Energy	D. Force	c. Push	Prim. 4 - First Term (85)

#### Final Revision 10 All the following are examples of pulling force, except. b. kicking a ball a. pulling the rope d. lifting up your bag c. opening the desk's drawer 11 When a body moves forward, the change that occurs is in b. the size of the body a. the position of the body d. Earth's gravity c. the mass of the body 12 Objects need a force to move, this force is represented in a. pushing only b. pulling only c pushing and pulling together d. the Earth gravity only 13 When a ball stands on the ground without moving, the forces acting on it are a unbalanced **b**. balanced c. pushing it up d. not equal 14 In the following figure, the body is under the effect of .... Smaller Force a. balanced forces and is moving to the right b. forces and is moving to the left c. unbalanced forces and is moving to the right d. unbalanced forces and is moving to the left 15 The energy gained by a ball when it falls from above is energy. a. potential b. kinetic c. light d. chemical Complete the following sentences using the words between

the brackets:

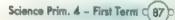
1	The car slows down its speed when it runs out of	fuel, as a	result of
	manuscript and manuscript and a	(gravity -	friction)
2	The forces makes the static object move	Þ	

(balanced - unbalanced)

The force that pulls things down is \_\_ (friction - gravity)

When playing the tug-of-war game, if each team pulls the ro	pe w	ith
equal force, the forces are	larce	(1)
To slow down the speed of a Shockwave truck, the drivers use	е	
parachutes.	(5 -	3)
3 Put (√) or (x):		
Air resists the motion of a car.	(	)
@ Gravitational force is an upward pulling force.	(	)
(a) When a pen falls from your hand, the acting force is gravity	(	)
When a static body is affected by balanced forces, the body mov	es. (	)
The seesaw moves up and down because the forces that act	on it c	re
unbalanced.	(	)
(6) When the position of the body changes from a fixed point, we	can s	ay
that the body moves.	(	)
The force that slows down or decreases the speed of an a	object	IS
gravity.	(	)
§ Gravity pulls objects towards the center of the Earth.	(	)
When a car crashes into a wall, it will not stop.	(	)
10 We eat food to gain energy.	(	)
1) Unbalanced forces cause a change in the object's position.	(	)
Write the scientific term:		
(1. It's the force that pulls objects towards the center of the Earth	٦.	
It is a push or pull that is applied to an object making ch	ange	its
position.		

It's the force that arises when objects rub against each other.





#### Choose from column (A) what suits it in column (B):

#### Column (A)

- Friction
- 2 Motion
- 3 Energy
- Gravity

#### Column (B)

- a. is the ability to do work.
- b. is the force that pulls things downwards,
- c. is the change of an object's position.
- d. is a force that arises between the surfaces of two contacting bodies.

#### Look at the following figure, then answer the question below:

Original **Point** 70 cm 35 cm

Which of these toy cars is affected by greater force? (Give reason for your answer.)

### When you sit on the chair without moving:

What is the name of the force that pulls you downward?



#### What happens if:

A boy on a bike stops pedaling?

## Revision

# Concept 2.2 Energy and Morton

#### Choose the correct answer: Which ball has kinetic energy but not potential energy? b. A ball sitting on a high shelf a A ball rolling down a ramp d. A ball rolling on a flat sidewalk c A ball bouncing up and down Which of the following can store energy? d. Rubber c. Plastic b. Wire a. Battery The energy gained by a ball when it falls from above is b. kinetic energy a. potential energy d. chemical energy c. light energy When an object moves down a ramp, its stored potential energy b. doesn't change a increases c. changes to a less active form of energy d changes to a more active form of energy 5 The energy that is stored in an object due to its position is known as \_\_\_ energy. d chemical c. electric b potential a kinetic The chemical energy stored in batteries is considered a form of \_\_\_ energy. d. light c. heat b. kinetic a. potential 7 The potential energy of an object depends on . a. its mass only b its height from the Earth's surface only c. its mass and its height from the Earth's surface d. its temperature 8 All type of energy can be classified into two main groups, which are a. light and sound energies b. chemical and electrical energies c. potential and kinetic energies

d. magnetic and thermal energies

Final Revision			
% Chemical energy	gy can be store	d in	
a. food only	,	b. batteries	only
c. television an	d food	d. food and l	batteries
10 The force that r	makes an objec	t move a distance	e is called
	b. potential		
is the ab			·
a. Energy	b. Force	c. Push	d. Pull
12 When we turn of	n a television.	and ene	ergies are produ
an soonid - Chen	nicał	b. light - chem	nical
c. sound - light		<b>d.</b> solar - light	
Complete the f	ollowing sent	ences using the	words between
the brackets:	3	shoes damig the	words between
1 When a person p	ushes a car forw	ard his body boay	nc to cure to
	I IIS STORE	d energy /incre	0000
0 0.011 (0	riveris the	Approxi stored	in the second
23	· COOK HIP HAVE	/ - [	mical - e ectrica
3 What kind of ene	rgy is stored insi	de the batteru?	o centred,
		4.004	ıy - Heat energy)
4 If the mass of an	object decrease	s, this means that	its kinetic energy
_		/ 100000	
top of a hill.	nergy is the ene	rgy which is store	d in a ball at the
6 The amount of end acting on it is called	d .	move an object th	nrough the force
	I to do work.	(work - p	otential energy)
8 The form of energy	that can be see		lara . C
			nergy - Gravity)
A		en is energy	
The energy in the second of the property of		en is energy	Consumit to
9 The energy i	s a stored energ	en is energy  Iy in an object due	Consumit to

(sound - light)



Put	(√) or (×):		
Any	moving object has a form of energy known as kinetic energy.		
		(	)
	en a roller coaster slides down fast, its kinetic energy increases		)
The	moving objects only have energy, while the objects that do	n't	
	ve have no energy.	(	)
	chemical potential energy in the car's fuel is converted into		
	etic energy while running the car.	(	)
	ere is a relationship between force and energy	(	)
Wh	en you kick a ball, kinetic energy is produced	(	)
As 1	the height of an object from the Earth's surface increases, its		
pot	ential energy decreases.	(	)
in t	he electric fan, the kinetic energy is converted into electrical		
	ergy.	(	)
Ene	ergy is neither destroyed nor created from nothing.		
		(	
) As	tatic ball on the ground will move if it is affected by		
	unbalanced force.	(	
As	tatic object at the top of the ramp has no kinetic energy.	(	
2 The	e chemical energy in a battery can be converted into electric	al	
	ergy.	(	2
3 Ani	y moving object has a form of energy known as light energy		
		(	
4 The	ermal energy is a type of kinetic energy.	(	
	und and light energies transfer in the air in the form of waves		
		(	
6 Un	balanced forces cause a change in an object's position.	(	)
Wr	ite the scientific term:		
1 It's	the energy that the object gains due to its motion.		
🎉 lt i:	s the ability to do work.		
3 It is	s a force that causes an object to move a distance.		

- 4 its the form of energy that increases when the speed of an object increases.
- 5 It is the stored energy in an object due to its position.

# Identify the correct form of energy in the following cases:

1 If a dog is barking at a cat, energy reaches your ears.

(sound - light)

- 2 In your cell phone's battery, chemical energy changes into \_\_\_\_\_\_
  energy (potential electrical)
- 3 A girl is skating on the sidewalk, her body has energy.

  (light kinetic)
- 4 Your eyes detect the energy coming towards you.

(light - sound)

- 5 When gasoline is burned inside a bus engine, energy is consumed
- 6 If you use a flashlight on a camping trip, (electrical chemical)
  energy comes out

(chemical - light)



#### Column (A)

- 1 Food
- 2 Kinetic energy
- 3 Potential energy

#### Column (B)

- increases by increasing the object's speed
- b. is a source of energy for humans.
- c. is the stored energy in an object due to its position
- cannot be converted into another form of energy.

## Cross out the odd word:

- 1 Sound energy Light energy Thermal energy Chemical energy
- 2 Sound energy Light energy Thermal energy Electrical energy
- 3 Guitar Flashlight Radio Alarm

# Kovision

# Concept 2.3 Energy and confisions

	Choose the corr	rect answer:		
W	The speed of a car	that travels 200	meters in 2 second	ds is m/s
	g 20	b. 40	c. 100	d.200
	. How can we calcu	late the speed of	an object?	
ľ	- Speed = Distant	ce - Time	b Speed = Distan	ce + Time
	c. Speed = Distance	ce x Time	d. Speed = Distan	ice - Time
	3 The measuring ur	nit of the distance	is .	
	a km/s	b. km	c. seconds	d.kg
	▲ The speed of an a	bject is measured	d in or me	eters per second
	a. kilometers per	hour	b. grams per sec	ond
	c hours per kilom	neter	d. kilometers per	
	5 The result of divid	ing the distance tr	raveled by the time	e equals
	a the energy	b. the force	c, the mass	the speed
	6 A human is slower	than a horse as th	ne human covers	the norse
	at the same time.			
	a. less distance th		b. greater distance	
	c. double the dist	ance of	d. twice the dista	
	7 Which of the follo	wing is a measur	ing unit of speed?	1 /505
	a. hr/km		c.kg/sec	d.m/sec
	8) The airbag is ma	de of		d cotton
	a. carton	b. nylon	c. rubber	a. Cotton
	9 Kinetic energy isr	n't affected by the	of the o	oject.
	a. mass	b. speed	c. color	d. weight
	10 If a car covered		meters in a time (	or 2 seconds, the
	speed of the car	is	20 /	d 5 m/sec
	a. 50 m/sec	b. 20 m/sec	c. 20 m/sec	augle m/sec
	11 The speed of the			d.2
	a. 400	<b>b</b> . 100	<b>c</b> . 200	0.2



12 The prof	tect(s) the driver	from moving fo	orward in a collis
a. glass window			d. tires
13 When the object			kinetic energy.
a. the same		c. less	d. slow
14 A very big truck r			
a. a very small e		b. a small eng	gine
c. a very big eng	9	d. no engine	
15 When two object		is transferred b	between them.
a. time			d. nothing
16 During a collision			e collision increas
and the risks incre	ease.		
a. a bicycle and a	car	b. two cars	
c. a train and a co	or	d. two trains	
Complete the fo	llowing senten	cas using the	words between
the brackets:	de tring de liter	ces using the	Words betwee
1 During a car crash	tho t-	. ()	
cushion,	i, trie is ii		as to provide a so
	4		(seatbelt - airbag
<ol><li>Airbags inflate au crash.</li></ol>	tomatically wher		
	da .	(5	eatbelt - sensors
3 When objects cras	in, transf		
A As a result of bitting	ا المطاعم	(0	listance – energy
4 As a result of hitting	y a ball with a ba	t, the _ of th	e ball will change
5 Speed is a .	Out of the second secon		(direction – mass)
6 Fast-moving object	quantity.	(ph.	sical - chemical)
6 Fast-moving object	is cause ad	nger than slow-	moving objects.
7 The big trucks need	to make	(1	(less - more)
7 The big trucks need 8 When the car's fue	ol completely su	(big engines	- small engines)
8 When the car's fue	er completely for	is out, its .	becomes zero.
9 The car needs	to move		(mass - speed)
10 If Noor travels with	her hicurle a dist	ance of 10 km in	(fuel - water)
she is moving at a s		(10 cm	two hours, then
11 absorb the er		during a collision	/hr - 5 km/hr)
20010 (10 0)	gg or the car (		and - South - Inc.
		210, 7	ALL AND THE STATE OF THE STATE

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	The speed of a moving object = (Distance * Time - Distance * 1		
	(Distance - Time - Distance -	ime	9)
~	When the speed of a car increases, its energy nergy ne		
100	(hiretic poic	ntic	II)
	On rising a ball in Newton's cradle without leaving it, it stores		
	(Allictic pote	ntic	(ار
	energy.		
1	Put (1) or (X):	(	1
	Seatbelt is one of the safety equipment in cars.	(	)
6	a collision the airbag deflates at the same speed us it innotes	(	)
600	should drive as fast as possible to avoid accidents.	1	)
65	If a car covered a distance of 10 m in a time of 2 seconds, the s	pee	d
15	aut - paris 5 m/sec.	-	)
6	The high-speed moving objects face less danger than the slower	er	
5		(	)
	objects.  The mass of a moving body affects its speed.	(	)
6	As a car's speed increases, the amount of fuel used decreases.	(	)
7	Because of the seatbelt, the driver cannot see the road clearly		
(8	Because of the seatbelt, the arrest same	(	)
	The amount of energy before collision is greater than that	af	ter
8	The amount of energy before complet to g.	(	)
	collision.	wto	n's
t	o A thermal energy is produced due to the friction between New	(	)
	cradle parts.		
P	Write the scientific term:		
	The process in which two or more objects crash into each other	er a	na
	an energy transfer occurs.		
4	2 Safety equipment that is used to prevent car passengers from		
	moving forward when the car stops suddenly.		
	3: Safety equipment that provides a soft cushion when it inflates		
	automatically with gas during a collision.		
	A heavy steel ball that swings on a cable and is used in the destri	uction	on
	of building parts.		



#### Choose from column (A) what suits it in column (B):

#### Column (A)

- 1 Gravity
- 2 Friction
- 3 Speed
- 4 Potential energy
- 5 Chemical energy

#### Column (B)

- a. is the energy stored inside the body due to its position.
- b is the force that pulls things downwards.
- c is a force that arises between the surfaces of two contacting bodies
- d. is the energy stored inside dry batteries.
- e. is the distance covered per time unit.



2

3

4

5



#### Answer the following questions:

- 1 Mention two of the safety equipment in the car.
- .2 A train travels from Cairo to Alexandria for a distance of 200 kilometers in 2 hours. Find its speed.
- 3 Calculate the speed of a train that covers 600 km in a time of 6 hours.
- Two cars moved at the same time for 20 seconds, car (a) covered a distance of 100 meters, while car (b) covered a distance of 300 meters. Which of the two cars has a higher speed?





(A) Choose the correct answer:

## 1 Cairo - Official Language Schools

## Question (1)

a. sound - chemical b. light - chemical c. sound - light d. solar - light A very big truck needs to move. a. a very small engine b. a small engine c. a very big engine d. no engine A polar climate		When we turn on a television,	and energies are produced
A very big truck needs	•		b. light - chemical
a. a very small engine c. a very big engine d. no engine  a. is the hottest place on Earth c. looks like the desert climate d. looks like the forest climate d. looks		c. sound - light	d. solar – light
a. a very small engine c. a very big engine d. no engine  a. is the hottest place on Earth c. looks like the desert climate d. looks like the forest climate d. looks		A very big truck needs	_ to move.
a. is the hottest place on Earth c. looks like the desert climate d. looks like the forest climate or meters per secon d. kilometers per hour c. hours per kilometer d. kilometers per kilogram d. kilometers per kilogram d. kilometers per kilogram d. kilometers per kilogram  (B) Study the follwing table, then complete:  Cars Car (A) Speed 200 km/h 400 km/h 500 km/h Car () is the fastest one.  (A) Put (/) or (X):  1 Bats use their sense of smell to avoid danger. 2 Fennec foxes live in deserts, while caracals live in forests. 3 The sharp spines protect barbary figs from hungry animals. 4 The moon is considered a light source. 5 Energy is the ability to do work. (B) Cross out the odd word: 1 The Sun - The moon - Fire - Candle 2 Bats - Fireflies - A blind person's cane - Dolphins 3 Guitar - Flashlight - Radio - Alarm		a. a very small engine	
c. looks like the desert climate  d. looks like the forest climate  The speed of an object is measured in or meters per second. A kilometers per hour c. hours per kilometer  Cars Car (A) Speed  200 km/h Car (C) Speed  200 km/h Speed  200 km/h Car (C) Speed  200 km/h Speed Speed  200 km/h Speed		c. a very big engine	d. no engine
C. looks like the desert climate  The speed of an object is measured in or meters per second.  It is speed of an object is measured in or meters per second.  It is grams per second.			
The speed of an object is measured in or meters per second  a. kilometers per hour  b. grams per second  d. kilometers per kilogram  (B) Study the follwing table, then complete:  Cars  Car (A)  Speed  200 km/h  400 km/h  Car (C)  Speed  200 km/h  Car (C)  Speed  200 km/h  Car (L)  Speed  200 km/h  Speed  200		c. looks like the desert climate	d looks like the forest climate
C. hours per kilometer  C. hours per kilometer  Cars  Car (A)  Speed  200 km/h  400 km/h  Car (C)  Speed  200 km/h  500 km/h  Car (C)  Speed  200 km/h  S		The speed of an object is measured.	red in or meters nose
(B) Study the follwing table, then complete:  Cars Car (A) Car (B) Car (C) Speed 200 km/h 400 km/h 500 km/h  Car () is the fastest one.  (A) Put (/) or (X):  1 Bats use their sense of smell to avoid danger.  2 Fennec foxes live in deserts, while caracals live in forests.  3 The sharp spines protect barbary flgs from hungry animals.  4 The moon is considered a light source.  5 Energy is the ability to do work.  (B) Cross out the odd word:  1 The Sun - The moon - Fire - Candle  2 Bats - Fireflies - A blind person's cane - Dolphins  3 Guitar - Flashlight - Radio - Alarm		The rest of the re	b. grams per second
Cars Car (A) Car (B) Car (C)  Speed 200 km/h 400 km/h 500 km/h  Car () is the fastest one.  (A) Put (/) or (/):  1 Bats use their sense of smell to avoid danger.  2 Fennec foxes live in deserts, while caracals live in forests.  3 The sharp spines protect barbary figs from hungry animals.  4 The moon is considered a light source.  5 Energy is the ability to do work.  (B) Cross out the odd word:  1 The Sun - The moon - Fire - Candle  2 Bats - Fireflies - A blind person's cane - Dolphins  3 Guitar - Flashlight - Radio - Alarm			complete:
Speed 200 km/h 400 km/h 500 km/h  Car () is the fastest one.  (A) Put (/) or (X):  1 Bats use their sense of smell to avoid danger.  2 Fennec foxes live in deserts, while caracals live in forests.  3 The sharp spines protect barbary figs from hungry animals.  4 The moon is considered a light source.  5 Energy is the ability to do work.  (B) Cross out the odd word:  1 The Sun - The moon - Fire - Candle  2 Bats - Fireflies - A blind person's cane - Dolphins  3 Guitar - Flashlight - Radio - Alarm			omprete:
1 Bats use their sense of smell to avoid danger. 2 Fennec foxes live in deserts, while caracals live in forests. 3 The sharp spines protect barbary figs from hungry animals. 4 The moon is considered a light source. 5 Energy is the ability to do work. (B) Cross out the odd word: 1 The Sun - The moon - Fire - Candle 2 Bats - Fireflies - A blind person's cane - Dolphins 3 Guitar - Flashlight - Radio - Alarm		Speed 200 km/h Car () is the fastest one.	400 km/h   500 km/h
1 Bats use their sense of smell to avoid danger. 2 Fennec foxes live in deserts, while caracals live in forests. 3 The sharp spines protect barbary flgs from hungry animals. 4 The moon is considered a light source. 5 Energy is the ability to do work. (B) Cross out the odd word: 1 The Sun - The moon - Fire - Candle 2 Bats - Fireflies - A blind person's cane - Dolphins 3 Guitar - Flashlight - Radio - Alarm		(A) Put (I) or (X): Question	n(1))
2 Fennec foxes live in deserts, while caracals live in forests. 3 The sharp spines protect barbary figs from hungry animals. 4 The moon is considered a light source. 5 Energy is the ability to do work. (B) Cross out the odd word: 1 The Sun - The moon - Fire - Candle 2 Bats - Fireflies - A blind person's cane - Dolphins (Compared to the information of the sharp spines in forests. (Compared to the information of the sharp spines in forests. (Compared to the information of the sharp spines in forests. (Compared to the sharp spines			roid don
The sharp spines protect barbary figs from hungry animals.  The moon is considered a light source.  Energy is the ability to do work.  (B) Cross out the odd word:  The Sun - The moon - Fire - Candle  Bats - Fireflies - A blind person's cane - Dolphins  Guitar - Flashlight - Radio - Alarm		2 Fennec foxes live in deserts while	Samuel ( )
The moon is considered a light source.  5 Energy is the ability to do work.  (B) Cross out the odd word:  1 The Sun - The moon - Fire - Candle  2 Bats - Fireflies - A blind person's cane - Dolphins  3 Guitar - Flashlight - Radio - Alarm		3 The sharp spines protect barbase	caracals live in forests. ( )
5 Energy is the ability to do work.  (B) Cross out the odd word:  1 The Sun - The moon - Fire - Candle  2 Bats - Fireflies - A blind person's cane - Dolphins  3 Guitar - Flashlight - Radio - Alarm		4 The moon is considered a light as	ngs from hungry animals. ( )
(B) Cross out the odd word:  1 The Sun - The moon - Fire - Candle  2 Bats - Fireflies - A blind person's cane - Dolphins  3 Guitar - Flashlight - Radio - Alarm			urce.
1 The Sun - The moon - Fire - Candle  2 Bats - Fireflies - A blind person's cane - Dolphins  3 Guitar - Flashlight - Radio - Alarm  ()		(B) Cross out the odd word:	( )
2 Bats - Fireflies - A blind person's cane - Dolphins  3 Guitar - Flashlight - Radio - Alarm  ()			lo
Guitar - Flashlight - Radio - Alarm			( )
			une - Dolphins ()
70 Summed Finn. 4 - Fust form			( )
	-	98 Science Prim 4 - First Ter-	

	Questio	11 (3)	
Choose from co	lumn (A) what	suits it in colu	mn (B):
Column (A)		Column (B)	1
1 Oxygen 2 An owl 3 Motion	b. is the cho	nal with a bowl-l inge in the object ecessary for res	t's position.
1	2)	(3)	
Classify the foll	owing animals i (Fishing cat – I	n the table be Dolphin - Bat)	low:
Animals that have a	super sight sense A	nimals that have a	super hearing sense
	Manager Challenger Manager March		
	- And the state of		. ~
Choose the corre	Cairo - Al-Az  Question  ect answer:	on (1)	
Choose the correction of the	Questice ct answer:	on (1) conents of the ne	rvous system, exc
Choose the correction of thea. spinal cord	Questice compared from the compared b. heart	c. nerves	rvous system, exc d. brain
Choose the correction of thea. spinal cord	Questice answer: g are from the composition becare the mass of an object answer:	c. nerves	rvous system, exc d. brain nergy
Choose the correction of thea. spinal cord  2 By increasing a. increases	Questice ect answer: gare from the composition of t	c. nerves ject, its kinetic er c. doesn't cho	d. brain nergy
Choose the correction of thea. spinal cord  2 By increasing a. increases	Duestice tanswer: g are from the composition to be heart the mass of an object to be decreases as the decreases ared a behavioral as	c. nerves ject, its kinetic er c. doesn't cha	d. brain nergy

Chemical energy is stored in the .

a. food only

c. food and TV

Science Prim. 4 - First Term 99

b. battery only

d. food and battery

2 The nervous system of consists of brain, spinal cord and nerves, such as elephants and dogs.

(rodents - birds - mammals - reptiles)

- 3 Which of the following organs work together to see different objects? (Nose and brain Eyes and brain) I are and brain Tongue and brain)
- '4 What is the force used to kick a ball by foot?(Pull Push Sound Light)



	The force that exists between a moving car and the ground on a it moves and that is opposite to the motion of the car is known	is the	е
	/rite the scientific term:		
) <b>Y</b>	They're air sacs surrounded by blood vessels in the respiratory sy	stem	1
1	It's the sense used to differentiate between smooth and rough sur	face	S
2	It's the sense osca to an energy that causes objects to rush to	ward	5
3			
	Earth's surface.		
	Question (2)		
) F	out (1) or (X):	n the	11
1	Agama lizards blend in with the green, huge trees to hide from	(	)
	enemies.	(	)
2	The hearing sense in dolphins is stronger than that in humans.		)
3	Light reflection depends on the smoothness of the surfaces		Ĺ
A	Unbalanced forces cause a change in the position of an object.		)
	Speed = Time ÷ Distance	(	)
	Pross out the odd word:		
1	Saliva - Stomach - Esophagus - Small intestine		
i i	Spinal cord - Lungs - Nerves - Brain		
	Fishing cats - Owls - Dolphins		
	A Date Fireflies - Dolphins	orcul	
	Sound energy - Light energy - Electrical energy - Thermal ene	199	
	4 Al Qalyubia		
	Question (1)		
(A)	Choose the correct answer:		
	1 When you move something towards you, this represents		
	a. pushing force b light energy c. pulling force d. sounde	nerg	Jy
	2 When an object is in motion, this means that its changes.		
	a. color b. size c. position d. shape		

Final Revision			
3 The help a. gills (B) What happens	<b>b</b> . lungs	n dissolved oxyge c. tail thes a nail on the	d. force
	Questi		
(A) Put (/) or (X):  1 Any moving ob  2 Energy is the al  3 Nocturnal anim  4 The wood is a t	ject has a form of bility to do work. als have eyes lar	energy known as	. (
(B) Write the scien			
- It's an object that	allows light to po	ass through it.	
	Questio	on(3)	
2 If the mass of a	ergy that can be s n object decreas	seen is es, this means tha	at its kinetic ener
3 A dolphin has a			
(B) Cross out the o		other by producir	ıg
Light energy - Sou		rmal energy – Che	emical energy
5 Ale	xandria – M Questio	ontazah Zoi	ne 1
(A) Choose the corr	ect answer:		
1. The deli	ver(s) food from	the pharynx to the	e stomach.
<ul><li>esophagus</li></ul>	b. throat	c. trachea	d. alveoli
2 Carton and woo			
O opaque	b. transparent	c. liquid	d. gaseous
3 A penguin's feet	b cold blood	els that bring C. warm water	up.
Con single Singl	S. COID DIOUG	c. warm water	a. cold water

can sing t	ınderwater t	o communicate			
a. Bull sharks	b. Humpback whales				
ar ando	,	d. Salaman	nders		
Cross out the odd	word: Nose	e - Trachea - St	omach - Lungs		
(A) Choose from colu	mn (A) wh	at suits it in co	olumn (B):		
Column (A)	\( -	Column	(B) —		
water lily		tat Is salty water			
Kapok tree		tat is fresh water			
3 pine tree		at is Amazon ra tat is snow.	lintorests		
Mangrove tree	d. its hobit	iut is show.			
1		<u></u>	(A)		
B) Write the scientif	ic term:				
- They are ants that o	ire responsib	le for finding foo	od.		
· 11109		ion (3)			
(A) Put ( / ) or ( X ):					
1 In an electric fan, th	ne electrical en	nergy chang <mark>es i</mark> r	nto kinetic energy	J.( )	
The fennec fox has				( )	
(3 Potential energy is	*	of a moving boo	dy.	( )	
Light travels in stro				( )	
B) Give a reason for:		chameleon is cove	ered with colored s	scales.	
(b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c					
G Alous	anduia (	Montozoh '	Zono 2		
6 Alexa	maria - i	Montazah 2	LOHE Z		
	Quest	ion (1)			
(A) Choose the corre	ct answer:				
₫ A/An is an	animal that	has the ability	to turn its head	in all	
directions.					
	b. owl	c. jerboa			
	ects the senso <b>b</b> . Kinetic	ory receptors in the c. Light	he eyes causing <b>d.</b> Magnet		
			Science Prim. 4 - First Terr	m (103)	

Final Revision				
All the following are a. kicking a ball	pulling forces,	except b. lifting up a k	Dall	
c. pulling the rope		d. gravity		
Animals communic	ate with each o	ther through		
•	reading	c. talking	d sound and lic	
(B) Write the scientific to	erm: It's a type of	adaptation that h	elps the animals his	
(A) Put (√) or (X):	Question		","	
The moon is a sour	ce of light.		(	
2 When a roller coast	er slides down, t	he kinetic energ	y increases, (	
3 Nocturnal animals be				
Transparent object				
(B) Cross out the odd w				
	Question	(3)		
(A) Choose from colun	nn (A) what su	uits it i <mark>n colu</mark> m	nn (B):	
Column (A)		Column (B)		
Speed Small Intention	a. The food gets digested completely in it.			
2 Small Intestine 3 Ants		ce covered in un		
4 Kilometer	d depend on th	ng unit for long of smell	distances. I to communicate.	
1 (2)	(3)	(A)	r to commonicate.	
(B) Choose the correct	answer:		- The state of the	
- To slow down the spe		ave truck the dri	Vers uso	
parachutes.		wash, the dr	(5 - 6 - 3)	
			(3 - 0 - 3)	

## 7 Alexandria - East Zone

## Question (1)

A) Choose the corre	ect answer:				
1 11 15 2 11 4 1			1		
a. esophagus	b lungs	c mouth	d. stomach		,
7 The extra large	of a fen	nec fox allo	w(s) heat to escape	e an	d
cool(s) the fox.					
	b. face	c. ears	d. eyes		
pr	stects the driver from moving forward in a collision				
3 A	b dashboard	c. seatbe	It d. tire		
a, glass to biect	s moving faster, it has energy.				
	h more	C. IESS	<b>Q.</b> 1.0		
g. the same  (B) Give a reason for:	None of the light	energy passe	es through the opaqu	Je	
B) Give a reason for:	Mone or the way				
objects.					
	Questio				
(A) Put (/) or (X):		don't affect	t neople's health.	(	)
1 Exhausts from C	ars and factories	dont unec	t people's health.	(	)
.2 The reflexes are	fast messages y	jou are bure	ts the small vehicle	· e wit	h
3 A large vehicle	causes more dan	nage as it ni	ts the small vehicle	(	)
				-	)
▲ The force of gra	vity is the force th	nat pulls the	objects downward.	,	
(B) What happens	if: The food in a	colorly is lov	v :		
	Questi	on (3)			
(A) Complete the f	ollowing states	nents:			
1 The white fur o			with the ice habita	it.	
.2 The moving ca	r is being slowed	down by a t	force called	ford	ce.
3 The	energy is a stor	red energy (	or the energy of po	sitio	n.
(B) Cross out the	odd word: Lungs	- Alveoli - C	Gills - Diaphragm		
(D) G. 555 545 5,75			Science Prim. 4 - First Ter	rm (10	150-

# 8 Damnhour Governorate

## Question (1)

(A) Choose the co	rrect answer:				
1 A ponther chai	meleon uses its	like a h	and.		
a. eyes	b. tail	c. head	d. ear	'S	
Motion is any o	change in the	relative to d	fixed start	ina n	<b>\</b> :
a. position	b. weight	c. mass	d. volu	nwe a b(	⊃l∏{
3 The speed of the	he train that cove	ered 400 m in 2 s			
m/se					
<b>a.</b> 400	<b>b</b> . 100	<b>c</b> . 200	<b>d</b> . 2		
(B) What happens i	f: The diaphragn	n contracts and m	noves down	Warda	)
	Questi			·· Gi G;	
(A) Put (\(\sigma\) or (\(X\):	- Guesti	Oli 121			
A fennec fox fee	eds on fruits only				
2 Potential energy	J is a form of sto	red energy		(	)
3 Thermal energy	is a tupe of kine	tic energy.		(	)
(B) Write the scient	tific term:	tic energy.		(	)
- The force that is e		ects rub against	and vi		
. a force that oppos	ses motion.	ects for against	each other	and it	is
	Questio	in (3)			
(A) Complete Ale C					
(A) Complete the fo	llowing senten	ices:			
1 The nervous syst	em of mammals	consists of the b	rain, nerves	and	
*					
2 Fireflies produce communicate.	Inside	their bodies that	t allows the	em to	0
	tootial				
3 Batteries have po	tomatically start	the form of store	d		
A Airbags inflate au	tornatically wher	i the - In co	irs detect a	crash.	
(B) Cross out odd wo	ru: Air - Water -	- wood - Glass			
-(1978- Amounta stunt at - that intill					

# 9 Menofia Governorate

### Question (1)

(A) Complete the following sentence	es:	
(A) Bats use the property to fine	d their food, but acacla trees warn	
the other nearby acacia trees from	om animals by sending	
- on in the dir		
their sense of to 0	communicate with each other.	
Ants use their series of	energy, but light energy is a	
3 Chemical energy is a form of		
form of energy.	a mainment of care during collisions	
form of are from the safety	equipment of cors doing comsons	
(B) What is the speed of a train that to	ravels 400 kilometers in 2 nours:	
Question	¥(2)	
(A) Choose the correct answer:	adaptation(s)	
1 Panting in fennec foxes belong to	b. behavioral	
a. structural	D. Deligatoral	
the second second	d neither structural nor behavioral	
a bath behavioral and structural	d. neither structural nor behavioral	
c. both behavioral and structural  The force that is used to kick a bal	with your legs is a lorce.	
c. both behavioral and structural     The force that is used to kick a bal     b. push	c. sound d. light	
<ul> <li>c. both behavioral and structural</li> <li>The force that is used to kick a bala.</li> <li>a. pull</li> <li>b. push</li> <li>By increasing the speed of an object</li> </ul>	c. sound  c. tits energy increase(s).	
<ul> <li>c. both behavioral and structural</li> <li>The force that is used to kick a balance</li> <li>pull</li> <li>push</li> <li>By increasing the speed of an object</li> <li>potential</li> </ul>	c. sound ect, its energy increase(s).  b. kinetic	
c. both behavioral and structural  The force that is used to kick a bala.  pull b. push  By increasing the speed of an object of an obj	c. sound c. sound d. light ect, its energy increase(s). b. kinetic d. chemical	
c. both behavioral and structural  The force that is used to kick a bala.  pull b. push  By increasing the speed of an object of a potential c. potential and kinetic  (B) Give a reason for: You can see cle	c. sound c. tits energy increase(s). b. kinetic d. chemical arly through your lenses.	
c. both behavioral and structural  The force that is used to kick a bala.  pull b. push  By increasing the speed of an object of an obj	c. sound c. tits energy increase(s). b. kinetic d. chemical arly through your lenses.	
c. both behavioral and structural  The force that is used to kick a bala.  a. pull b. push  By increasing the speed of an object. c. potential c. potential and kinetic  (B) Give a reason for: You can see clean  Question  (A) Put (/) or (X):	c. sound d. light ect, its energy increase(s). b. kinetic d. chemical arly through your lenses.	
c. both behavioral and structural  The force that is used to kick a bala.  a. pull b. push  By increasing the speed of an object. c. potential c. potential and kinetic  (B) Give a reason for: You can see clean  Question  (A) Put (/) or (X):	c. sound d. light ect, its energy increase(s). b. kinetic d. chemical arly through your lenses.	
c. both behavioral and structural  The force that is used to kick a bala.  a. pull b. push  By increasing the speed of an object. c. potential c. potential and kinetic  (B) Give a reason for: You can see clean  Question  (A) Put (/) or (X):  1 The diaphragm contracts and more	c. sound d. light ect, its energy increase(s). b. kinetic d. chemical arly through your lenses.	
c. both behavioral and structural  The force that is used to kick a bala.  a. pull b. push  By increasing the speed of an object. c. potential c. potential and kinetic  (B) Give a reason for: You can see clean  Question  (A) Put (/) or (X):  1 The diaphragm contracts and more  Kapok trees have buttress roots.	c. sound d. light ect, its energy increase(s). b. kinetic d. chemical arly through your lenses.  ves upward during inhalation. ( ) ( )	
c. both behavioral and structural  The force that is used to kick a bala.  a. pull b. push  By increasing the speed of an object. c. potential c. potential and kinetic  (B) Give a reason for: You can see clean  Question  (A) Put (/) or (X):  1 The diaphragm contracts and move.  Kapok trees have buttress roots.  The battery stores chemical energy.	c. sound d. light ect, its energy increase(s). b. kinetic d. chemical arly through your lenses.  ves upward during inhalation. ( ) ( ) ( )	
c. both behavioral and structural  The force that is used to kick a bala.  a. pull b. push  By increasing the speed of an object. c. potential c. potential and kinetic  (B) Give a reason for: You can see clean  Question  (A) Put (/) or (X):  1 The diaphragm contracts and more  Kapok trees have buttress roots.	c. sound d. light ect, its energy increase(s). b. kinetic d. chemical arly through your lenses.  ves upward during inhalation. ( ) ( ) ( )	
c. both behavioral and structural  The force that is used to kick a bala.  a. pull b. push  By increasing the speed of an object. a. potential c. potential and kinetic  (B) Give a reason for: You can see clean  Question  (A) Put (/) or (X):  The diaphragm contracts and move the kapok trees have buttress roots.  The battery stores chemical energy that is affected by balanced for the contracts and move the contracts are contracts and move the contracts and move the contracts and move the contracts are contracts and contracts are contra	c. sound d. light ect, its energy increase(s). b. kinetic d. chemical arly through your lenses.  ves upward during inhalation. ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )	

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### 10 Kafr El-Sheikh Governorate



(A) (	hoose the corre	ect answer:		
1	Both acacia trees	s and kapok trees	have the same	
	a. habitat	b. shape	c. roots	d. trunk
2	forces ca	use the movemer	nt of static objects	
	a. Balanced	b. Unbalanced	c. Friction	d. Equa
(B) V	Vhat happens if:	A boy on a bike	stops pedaling?	
		Question	([2])	
(A) P	ut (√) or (X):			
1	The large intestine	e absorbs fat fror	n waste.	(
2	Penguins can star	nd on ice all day.		
3	A static object at t	the top of the ran	np has no kinetic e	energy (
4	Sound and light er	nergies transfer ir	the air in the form	n of waves (
(B) W	rite the scientif	ic term:		
- 1	he time taken by a	n organism's boo	ly to respond to d	anger.
		Qualian		
(A) C	omplete using th	ie words betwe	en brackets:	
		(light - sound - h	ead – truck)	
ħ	Gills are found on t	ooth sides of the	fish's	
2	The eye is the sens	sory organ that is	affected by	
3	Ahas the	biggest engine.		
4	Collision between r	moving objects al	ways produces	energy
(B) Cr	oss out the odd	word: Brain - Li	ings - Nervos - Sp	inal cord

# 11 Mansoura Governorate - Model (A)



Question (1)	
(A) Choose the correct answer:	
(A) Choose the County of Choose the County of Raising your thumb up or lowering it down is a kind of	
(COIDES - HOTES - HOTES - HOTES	s)
2 You have the greatest potential energy when you are standing at a	
	n
neight of is one of the behavioral adaptations that helps an animal protect	
(Camoufiage - Extinction - Immigration - Reproduction	, חו
All the following are from the components of the nervous system.	a c
/ co a d . / / / /   D   D   D   D   D   D   D   D	7
except the  (Spindreold Head to do work  (B) What is the kind of energy inside an object ready to do work	
Quettion (2)	
(A) Put (/) or (X):  1 Adaptation does not help living organisms survive.  2 Unbalanced forces cause the motion of objects.  3 Nocturnal animals have bigger eyes than human's eyes  4 If you took a bus and stopped suddenly on the road, your body	)
all mayo backward.	,
(B) Give a reason for: Fishing cats can hunt their prey in darkness	
Question (1)	
(A) Complete the following sentences:	
1 On running and doing effort, the rate of your breath	
is one of the safety means in a car.	
3 is the ability to do work.	
4 Fireflies communicate by	
(B) Look at the light rays in figures A and	. » -»
B. which of them is an opaque object	

and which is a transparent one?

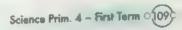


Figure (A)

Figure (B)

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# 12 Mansoura Governorate - Model (B)

dues	(ION (II)
Complete the following senten	ces with words between brackets
1 The processes and inte	rprets information. (spinal cord - brains reflects light better? (Wood
Which of the following surfaces	reflects light better? (Wood - Metals fall towards the ground.
3 force helps objects to	fall towards the ground.
	(Friction o
4 When the push force applied on	(Friction - Gravity an object on a flat road increases,
(potential energy of the object increasi	es - kinetic energy of the object increases
5 Bats can hunt insects at night	depending on
Data carriora maceta at mgra	their strong sense of vision - the echo
(1	then strong sense of vision - the echo
	tion (2)
Put (/) or (X):	
I he diaphragm helps in the prod	cesses of inhalation and exhalation.(
2 Friction force acts in the same	direction of motion of the object.
3 When a collision happens betw	een two objects, they exchange their
energies.	
4 Communication and Information	on transfer occur only in humans.( )
Desert plants are characterized	
	ion (3)
Choose from column (A) what s	
Column (A)	Column (B)
The pencil falling towards the	a. light and thermal energies.
ground represents	b. help fish to extract the dissolved
2 Whales communicate by	oxygen in water.
3 In the large intestine,	c. a pull force.
4 The produced energies when	d, singing.
we turn on a lamp are 5 Gills	e. liquids are absorbed from the undigested food.
11/20 (20)	analgested lood.

# 13 Fayoum Governorate

# Question (1)

	Question	WILE	
(A) Choose the correct Raising your thumb a. colors	o, codes	it down is a kind c waves	of d. lights
d. Noctornal	ar stops suddenl	c.harmful y, the passenger	's body moves to
a. right  The speed of a car	CHOTA	c forward	d. backward
(B) Complete: - Fishing cats have the			e of the presence
of	Question		
(A) Put (/) or (X):  The ear is the sens  The respiratory system  Because of the sess  The chemical pote	sory organ responsit	onsible for seeing ole for the entry o	oad clearly. ( )
energy.  (B) Write the scientif	is torm: It's the	body's main cor	ntrol center.
	Ouesto		
(A) Choose from colu	mn (A) what s	uits it in colun	nn (B):
Column (A)  1 Kinetic energy 2 Gravity 3 An owl	i. is an animal with a series structural acceptance of the series of the	h a bowl-like face daptations whose	e function is ion of an object.
(B) Look at the path rays in figures (A Determine which of opaque and which is (A):(B):	of the light  and (B).  the two objects is		

#### Dakahlia Governorate 14

	Question	and the second	
(A) Choose the co	rrect answer:		
1) Bats are	animals.		
a. nocturnal	b morning	c non-hearing	d. non-fluin
2	he ability to do work.		9
a. Energy	b. Force	c. Push	d. Pull
3 All the followin	a are components of	the nervous sus	tem eve
o. the spinal c	ord b. the heart	c the nerves	d. the brois
I I I DO Choman		ter in appointment	
(B) Give a reason	energy stored in batte lergy b. kinetic energy	, c. heat energy	d. light energin
. ,			- 4
Some types of it	zards that live in rock		ioriui scales
(A) Put (√) or (X):	Question	(2)	
In order for the	code to be translated	the brain mus	t identificity
2 When a pen fa	ills down from your ha	nd the actina fo	orce is the are
10100.			, and a second
3 The respiratory	j system is responsible	for the entry of	air into the hoa
			/ ".
time name	adle, the kinetic energy	of the moving b	alls increases as
**************************************			
(B) What happens	n. buts cannot use th	e echolocation	property?
(A) Ch	Question		
(A) Choose from co	olumn (A) what sui	ts it in cloumr	(B):
Column (A)		Column (B) -	
1 Kinetic energy	a. is a form of energy	that affects ou	r ears
2 Thermal	b. is produced due to	the friction between	veen the
energy	moving balls of Ne	wton's cradle	
3 Sound energy	c. is the gained energy	during the motio	n of an object.
(B) Complete the f	ollowing sentences	from the two	brackets:
The eyes send i	messages to the	through th	
5 The feet	( )	(brain)	المعمد المسائدة
Z The fat layer un	nder the animal's skin t	o warm it is cons	sidered a
adaptation.		/ Street	1 1 1 1 1
C) Calculate the sp	beed of a train that	covers 500 kil	ometers in 5
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# 15 Beni Suif Governorate

## Question [1]

	choose the correct answer:
A)	Oxygen gets into the lungs during the process
ļ	(inhalation - exhalation - digestion - excretion)
	You could determine how high the sound is by the of the sound
6	(type - pitch - style - echo)
2	The system is responsible for the digestion of food
٥	(respiratory - digestive - nervous - circulatory)
A	The stored energy inside an object is called energy
	(kinetic - thermal - potential - sound)
6) [	Determine the type of adaptation (structural) or (behavioral):
- La	ne pantner chameleon puffs its body with air to appear bigger in size.
	Question (2)
	Complete using (brain - Carton - sharp spines - Gravity):
1	Acac a trees have around their leaves to protect them if an
	animal tries to eat them.
2	is an opaque object.
3	force makes objects fall towards the Earth.
1	The is considered the control center of the body.
(B)	What happens if: Balancea forces act on a static object?
	Question (3)
(A)	Put (/) or (X):
	The kinetic energy of an object decreases when its speed decreases ( )
:	Writing is a way of communication between animals ( )
	3 Energy is not destroyed, but it changes from one form to another ( )
(B)	Cross out the odd word: Speed - Energy - Distance - Time
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### 16 Port Said Governorate

# Questien (1)

(A)	Choose the corr	ect answer:		
	1 The presence of	thick white fur is	an adaptation in	
	a. starred agam	a lizards	<b>b</b> . polar bears	
	c. fennec foxes		d. forest bears	
	2 Fish use their	to breat	he in water.	
	a. tail	b. eyes	c. lungs	d. gills
	3 When the object			is transferrer
	between them.			3.70(
	a. time	<b>b.</b> distance	c. energy	<b>d.</b> nothing
	4 What force do yo	ou use to kick a l	ball with your leg?	
	a. Pull		c. Sound	<b>d.</b> Light
(B)	Write the scient	ific term:		
	It's a property by		locate its prey in	sects through the
	sound reflected fro	om them.		
		(Laule)	11 (21)	
(A)	Put (√) or (X):	Na Additional Display		
	1 Animals that an animals,	e active during	the daytime are	callea nocturnal
	2 Eyes are consider	ed sensory organ	is of light, not as sou	
	3 Gravity pulls obje			( )
	4 Unbalanced force	es cause a chan	ge in the object's p	osition ( )
	Write the name	of:		
	- An animal that car	turn its head in	all directions.	
		Qu-tile	nial	
N III	Employe the fo	HOWER STORE	C235:	
	1 The leaves of	trees loo	k like your hand.	
	2 The human body			
			uipment which are	
	4 When the speed			
(B)	Vyhat is the type	of adaptation	I Ian colored ful of	t tennec foxes
char e	Calance Daine 4 First Town			

# 17. Ismailia Governorate



	Question	Taras.	
(A) Complete the followard An Arctic fox has The spinal cord below the force that pulls The form of energy  (B) Give a reason for:	things down to the that can be see a jerboa has long	system. the ground is en is ener g, hind legs.	gy.
(A) Write the scientification of the process in vision of the process i	which two objects cteristics that he	s crash into each elp living organis rub against each a light source and	other.
(A) Choose the correction of the following  a. nose  The chemical energy.	are organs of the bolding being bein	c.trachea patteries is consid	d.large intestine dered a form of
<ul><li>a. potential</li><li>By increasing the</li><li>a. speed</li><li>A Rising a thumb u</li></ul>	b. height	c. sound	d. light d. heat
a. sound	D. COUCS	3. 11 M 4 M M	



### 18 Red Sea Governorate



(A) (	Choose the correct answer:
	F sh breathe oxygen gas aissolved in water through their
	(skin - gills - lungs - tail)
2	is one of the opaque objects that doesn't allow ight to pass
	through. (Glass - Air - Water - Carton paper)
3	A the following from the components of the nervous system, except
	the (spinal cord - heart - nerves - brain)
4	Objects fall down towards the Earth's center by the force of
	(gravity - pushing - friction - pull and push)
(B) V	Why are some animals able to see in the dark?
E	Because
	Humilion (2)
(A) (	Complete from the brackets below:
1	The organ that is responsible for sight is the (ear - eye)
2	When the speed of an object increases, its energy increases
	(kinetic - potential)
3	The is a tube that has muscles to move the food down into
	the stomach. (trachea – esophagus)
4	When an electric lamp is turned on, energy is produced
	(light - chemical)
(B) V	Vhat happens if: Light falls on a shiny, smooth surface like a mirror?
	Question (1)
(A) I	Put (/) or (X):
1	A fennec fox live in a polar region. ( )
2	
3	Energy is the ability to do work.
	Static objects move when they are affected by balanced forces.( )
, ,	Acacia trees have very long roots to search for water.
M	ention the type of adaptation.
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# 19 Sohag - Al-Azhar Al-Sharif

	hoose the correct answer:
1	The System is responsible for supplying the body with oxygen and getting rid of carbon dioxide gas.
	a. pervous b respiratory ( digestive d. motor
2	Light rays scatter when they reflect from
	<ul> <li>a. the lenses of glasses</li> <li>b. a metallic surface</li> <li>c. a mirror</li> <li>d. a wooden board</li> </ul>
2	When a car moves down a hill.
V	a. potential energy changes to kinetic energy
	b. kinetic energy changes to potential energy
	c. no energy change happens d. the car doesn't have energy at all
	ut (·/) or (X):
1	Speed transfers when collision occurs between a ball and a bat ( )
2	A part of the kinetic energy is converted into sound energy during collision.
3	So a er ants communicate by sending smelly messages when in
	danger. ( )
	Questinn (2)
C	omplete using the words: structural - colored scales - whale - reflection
	A panther chameleon has to hide and hunt.
2	A communicates by singing.
3	The thin layer existing in the eyes of nocturnal animals is an example
	of adaptation.
) C	orrect the underlined words:
1	The spinal cord is the main control organ in the body
	Matter's the force which pulls objects down towards the Earth
3	Opaque objects allow light to pass through them
	Question (3)
h	ose from column (A) what suits it in cloumn (B):
_	Column (A) Column (B)
1.	The small intestine
2	Animals that live in cold regions have b. work.
3	When you kick a ball, you are doing C. digests food completely.

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### Assuit

### Question (1)

(A) Complete these sentences with words between brackets		
1 If a plant is living in desert, its roots are		
(long and thick - weak and	sho	rt)
2 The system which is responsible for reflexes is the system	m	
(digestive - ner	VOI	US)
3 Objects fall on the ground because of		
(gravity – fr	Ctic	n)
Any static object lying at a height from Earth's surface has		
energy. (thermal – pote	enți	al)
The mean the type of adaptation in bird immigration.		
Question (2)		
(A) Put (√) or (X):		
1 All animals have the ability to see at night.	(	)
2 If the brain cannot recognize a code, it can translate this code.	(	)
3 The object moves at a great speed if it is pushed by a great force	(	)
4 When the car stops suddenly, your body moves backward.	(	)
(B) Write the scientific term:		
It's the object that allows light to pass through it.		
Question [3]		
(A) Complete using the words below:		
(collision - unbalanced - hearing - exhalation)		
1 During process, the diaphragm relaxes.		
2 The forces that act on a static object and cause its motion are		
forces.		
3 Dolphins have a super sense of		
(B) Cross out the odd word:		
Penguin - Polar bear - Agama lizard - Arctic fox		

8

# Model Answers



# Unit 1 Concept () Lesson () 2 d 3 d 3 d 7 a

- 1 1 c 2 d 3 d 4 a 5 c 6 d 7 a 8 b 9 c 10 b 11 d 12 d 13 a 14 b 15 c 16 d 17 d
- 1 die 2 fats 3 scoles
  4 coldest 5 human
  6 cold 7 polar 8 Camouflage

9 thick 10 black 11 fennec foxes

- 1 d, d. 2 a, c 3 e, e 4 c, a
- 1 Adaptations
  2 Penguin
  3 Blood vessels
  4 Fat layer
  5 Habitat
  6 Camouflage
  7 Caracal
  8 Polar bear
  - 9 Fennec fox
- polar bear, snowbrown bear, treescold, warm
  - 4° prey, predators
- 1 Thick fur 2 White feathers
  Penguin 4 Polar bear

  1 (1), (3) 2 (4)
- (8) 1 (1), (3) 2 (4) 3 (2), (5), (6) 4 (5)
- 1 To survive in their environment

2 (A)

2 To stay cool and avoid hot weather in the daytime

- 3 Because the blood vessels in its feet and toes are weaved to allow the exchange of heat between warm and cold blood.
- 4 To keep its body warm.
- 5 To stay warm and sneak up on its prey.
- 6 To hide from its prey or predators.
- 1 The human can stand on ice barefoot all day without being frozen.
  - 2 It can't sneak up on its prey.
  - 3 Its feet will freeze.
  - 4 It couldn't hide from its prey or predators.

# Concept 0 Lesson 2

<b>1</b> 1 a	2 C	<b>3</b> C	<b>4</b> c
5 C	6 d	7 c	8 b
9 b	10 d	11 b	<b>12</b> d
13 d	14 d	15 d	16 b
17 b	18 C	19 d	20 b
21 b	<b>22</b> d	23 b	

- 2 1 large 2 shorter
  - 3 Arctic 4 short
  - 5 Arctic 6 lack
  - 7 brown8 behavioral9 salt10 separately
  - 11 toil 12 rocks 13 yellow
  - 14 kapok trees 15 trunk

17 behavioral

18 Catching sunlight

16 savannah

- 19 wind 20 soggy
- 21 savannah grasslands

1 (B)

- 3 X 4 1 7 X BX 11 / 12 X 10 X 15 / 16 X 14 / 13 X 19 X 20 X 18 X 17 V
  - 21 1
- 1 Behavioral adaptation
- 2 Structural adaptation
- 3 Bull shark 4 Fennec fox
- 5 Arctic fox
- & 'Countershading
- 8 Burrow 7 Panting
- 9 Amazon rainforest
- 10 Savannah 11 Taproots root
- 12 Buttress roots 13 Kapok tree
- 14 Acada tree
- 15 Behavioral adaptation
- 16 Trunk . 17 Poison
- 6 1 Wide leaves 2 Acacia tree
- 1 Trees: Acacia tree, kapok tree
  - a. Grassland b. Drought
  - c. mild d. Soggu
  - f. Strong e. it is easu
  - 2 Acacia tree : Savannah, umbrella shape, taproots, tiny leaves Kapok tree Amazon rainforest. umbrella shape, buttress roots,
    - hand-like leaves
  - 2 air, behavioral 3 bull shark
  - 4 fennec fox. Arctic fox
  - 5 independently

1 structural

1 Fennec fox : Desert, tan-colored fur, long ears

- 2 Arctic fox: Tundra, white in winter and brown or grey in summer. short ears
- 1 c.e 2 e.c 3 d.a 4 b. d 5 111
- 1 B 2 B 7 B B 6 S 9 B 10 S
- 1 A fennec fox has extra-large ears to stau cool, but the Arctic fox's short ears keep it warm.
  - 2 Due to the lack of food.
  - 3 To cut the preu's flesh.
  - 4 To sneak up on its prey.
  - 5 Because only bull sharks can survive in fresh water.
  - 6 To search for its prey and look out for its enemies at the same time.
  - 7 To hold on the tree's branches.
  - 8 To score its enemies.
  - 9 Because plants have structural and behavioral adaptations.
  - 10 The acacia tree's roots help it search for water, but the roots of a kapok tree fix the tree firmly in the soggy soil.
  - 11 The tiny leaves reduce the water loss, and the spines are to not be eaten bu animals.
  - 12 To let the wind pass through itsleaves without being torn.,
  - 1 Its color will change to uellow.
    - 2 It moves to a river to search for food.
    - 3 It couldn't sneak up on its prey.

- It will surprise its prey.
- 5 It couldn't move them Independentlu.
- 6 It wouldn't hide from its prey or predators.
- 7 They won't get the needed water.
- 8 The acacla tree secretes polson that makes its leaves taste bad.
- It will get broken by the strong wind.

Concept 0	
Lesson 🗐	

0	3	d	12	d	3	b	4	С
	5	d	6	b	7	d	8	b
	9	d	10	C	11	a	12	d
	13	a	14	b	15	a	16	a
	17	d	18	b	19	b	20	d
	21	С	22	b	23	d	24	d
	25	С	26	d	27	С	28	b
	29	d	30	a	31	b	32	d
	33	С	34	d	35	b		

- n triangular
- 2 wide
- 3: Water lilies
- 4 long
- 5 yellow 6 teeth and tongue
- 7 esophagus
- 8 small intestine
- 9 small intestine
- 10 large intestine
- 11 anus 12 small intestine
- 13 water 14 blood
- 15 anus 16 carbon dioxide
- 17 carbon dioxide 18 running
- 19 respiratory
  - 20 exhalation
- 21 expands
- . 22 blood
- 23 bronchi
- 24 blood vessels

- 26 exhale 25 enlarges 27 pharynx 28 ribs 29 alveoli 30 trachea
- ( I / .2 X 3. X 4 X 5 / 6 X 17 X 8 / 9 X 10 / 11 / 12 x 13 / -14 X 15 X 16 X
  - 17 X 18 / 19 X 20 x 21 /
- ◆ 1. Pine tree
- 2 Water Illu
- 3 Mangrove tree 4 Needle leaves
- 5 Digestion process
- 6 Digestive system
- 7 Small intestine
  - 8 Mouth
- 9 Saliva
- 10 Stomach
- 11 Esophagus
- 12 Large intestine
- 13 Small intestine
  - 14 Small intestine
- 15 Inhalation process
- 16 Alveoli
- 17 Diaphragm
- 18 Bronchioles
- 19 Pharunx

- 4 1 Kapok tree
- 2 Polar bear
- 3 Mangrove tree
- 4 Trachea
- 5 Stomach
- 6 Throat
- 7: Exhalation
- - 1 oxygen, energy 2 teeth, tongue
  - 3 esophagus, trachea
  - 4 alveoli, blood vessels

#### 1 Palm Tree:

Habitat: Desert.

Roots Shape: Long and thick roots

- Mangrove Tree:

Habitat: Salt water

Roots Shape: Long and strong

#### 2 Water Lily:

Habitat: Fresh water (wetland) Leaves Shape: Wide leaves

#### - Acacia Tree:

Habitat: Savannoh Leaves Shape: Tiny leaves

#### 3 Inhalation:

Diaphragm: Contracts and moves down

Chest Size: Increases Air Rich in: Oxygen gas

#### - Exhalation:

Diaphragm: Relaxes and moves up Chest Size: Decreases

Air Rich in: Carbon dioxide gas

Digestive System: Stomach - Anus -Tonque - Small intestine

Respiratory System: Diaphragm -Trachea - Nose - Lungs - Alveoli

Both Systems: Pharunx

- ② 1. b, d 2 d, a 3 e, b ♣ a, e (A) 1 d 2 d 3 b (B) 1 C 4 a
- 2 Behavioral 1 Structural
  - 3 Structural 4 Structural
  - 5 Structural
- palm tree, desert, riarrow, resist wind
  - 2 acacia tree, savannah, tiny, prevent water loss
  - 3 pine tree, snow, needle-like, prevent water loss
  - 4 kapok tree, Amazon forests, hand-like, allow wind to move

through the leaves without cutting them

#### Figure (A):

- 1 Mouth
- 2 Esophagus
- 3 Liver
- 4 Stornach
- 5 Pancreas
- 6 Large Intestine
- 7 Small intestine

#### Figure (B):

- 1. Nose 2 Pharynx (Throat)
- 3. Trachea
- · 4 Lungs
- 5 Diaphragm
- To absorb a large amount of sunlight.
  - 2 To resist the strong wind.
  - 3. To let the snow slide down and not get the branches broken.
  - 4 To get energy.
  - 5 Because they crush, moisten and mix the food to be swallowed easily.
  - 6 Because they pour their juices in the small intestine to complete the food digestion.
  - 7 Because when it contracts, oxugen gas enters the lungs; and when it relaxes, carbon dioxide gas is expelled out of the body.
  - 8 To keep our respiratory system healthy.
  - 9 To keep our digestive system healthy.
- 1 It won't resist the strong wind and it will get broken.
  - 2 The snow won't slide down causing its branches to break down.
  - 3 Food won't get moistened and won't be swallowed easily.
  - 4. They will harm our digestive system.

5 The chest size decreases and carbon dioxide gas is expelled out of the body



- 1 b 2 c 3 c 4 b 5 c 6 b 7 d 8 a
- Carbon dioxide 2 structural
  gills 4 gills
  soil 6 seeds 7 Water
  gills (9 Water 10 restore
- € 1 X (2: X 3:√

11 negative

- blood vessels 2 lungs, air
  Smog 4 asthma
- G 1 Gills 2 Duing crops
- Lungs
  Gills
  Blood vessels
  Oxygen gas
  Carbon dioxide gas
- 70 1 d 2 e 3 b 4 c
- 1 Replanting removed forests2 Removal of air and water
- pollutants

  1 Humans' lungs extract oxygen from air, but fish's gills extract

oxygen from water.

2 Because they may cause also appearance of plants and animals living in the environment.

- 3 Due to the high level of air pollution.
- As they contain smog that causes air pollution.
- 1 They can breathe underwater.
  - 2 It makes it hard for humans to breathe
  - It causes lung damage, asthma and breathing problems.

# Concept () Lesson (5)

- 1) 1: d 2 c 3 c 4 d 5 c 6 d 7, b 8 b
- 2 rainforests
  3 lungs 4 Humans
  5 amphibian 6 skin
  7 increases 8 dry
  - 9 viruses
- ③ 1. x · 2 x 3 √ 4 √ (5 x 6 √ 7 x 8 √
- 4 1. Salamanders 2 lungs, air 13. gills, water
- 5 1 Fish 2
- 5 1 Fish2 Palm tree6 1 Amphibians2 Oxygen gas
  - 3 Skin 4 Lungs
  - 5 Endangered species
- 1 b 2 c 3 a
- To save them from extinction.
   Because they can respire oxygen in water through their skin and
  - through their lungs on land.

    3 Because they only can survive

in a moist environment and the savannah is a dry one.

Their population decreases, and they may go extinct.

# Concept @ Lesson ()

A 1	C	2 0	4 C	4 C
0 1	b	6 d	7 a	8 b

4	F	hearing sense	2	sound
4	3	solid 4 touch	5	smell
	ő	reflection	Ż	structural
	ė	sharper	9	hearing

1 X	2 X	3 X	1.1
1 X	6 X	21	,

1 monkey		2	smell	
3 echolocation	١.			

		D. H. da perle	2	Tarrela	-
6	1	Bull shark	4	Touch	
	3	Tonque			

6 1 Echo	2. Echolocation	
3 Hearing sense	4 Tongue	
5 Smell sense	6 Tongue	

0	(A) !	ļ	b	2	d	3	a	4	C
Ĭ	(B) 1	1	d	2	С	3	a	4	
		5	h						

- 8 1; To communicate with each other to move and search for food.
  - 2 Because they depend on echolocation to locate their prey.
- The sound waves bounce back in the form of an echo and the dolphin locates its prey.
  - 2 They can't find their prey in dark water

# Concept @ Lesson &

11 d	2 0	J, C	4 C
8 c	ø b	# c	8 d
9 a	10 a	H c	12 d
13 d	14 c	14 b	16 d
17.0	18 c	19 b	20 C
2j c	22 d		

21	nervous	3. behavioral
3	head 4 bowl	6, feathers
6	bat .7 owl	8 brain
9.	eye	10 backbone
11	nerves	12 nose
13	nervous	14 jerboa
15	decreases	16 delayed
17	zigzağ	18 structural
19	desert	20 Hair

31.1	.2 X	,3, X	AJ
5 /	61	71	8 /
91	10 X	11 X	12 🗸
13 X	14: 1	15 X	16 X
17 ✓			

- (A) 1 message, brain, nerves2 mammal, rodent3 owl
  - (B) 1 reaction time

2 decreases, survive

3 ears, long

4 zigzag

5 danger

6 Nocturnal animals

2 Echolocation 3 Bat 4 Owl

5 Nervous system 6 Brain

3 Spinal cord 8 Nerves

- 9 Sensory receptors
- 10 Jerboa
- 11 Nervous sustem
- 12 Reaction time 13 Brain
- 14 Behavioral adaptation
- Panther chameleon
  - 2 Heart
- 3 Jerboa
- Senses: Sight Smell Touch -Hearing - Taste

Sensory Organs: Tongue - Nose -

Eue - Ear - Skin

- 8 Echolocation: Dolphin Bat
  - Camouflage: Fennec fox -Chameleon - Bull shark
- 4. a .3 d (A) Frc -2 b (B) 1 c 2 b 13 · d
  - (C) 1 b ,2 a 3 C
- 2 No. Nervous system
  - 3 a. Brain
- b. Spinal cord
- c. Nerves
- 1 (1), echolocation
  - 2 (3), desert
  - 3 (2), a bowl-shaped
  - 4 nocturnal, night, darkness
- (D) a.5 **b**. 3 c. 1 e. 2 d. 4
- 1 To surprise their prey in the dark, escape from the hot weather at the day and due to the availability of the prey at night.

- 2 Because they depend on the echolocation property.
- 3 To pick up and amplify distant sounds and direct them to the ears
- Because it processes the information gathered by the sensory organs and sends the proper responses.
- 5 Because it helps the living organism stay safe and avoid danger in their environment.
- 6 To hear any movement of a nearby snake.
- 7 To jump long distances and escape from any danger.
- 8 To catch the sand while jumpina.
- 1 They return back in the form of echo that is picked up by the bat's ears and locate the insect.
  - 2 It translates them and sends the proper response.
  - 3 She withdraws her hand quickly.
  - 4 It jumps quickly in less than a second.

### Concept @ Lesson (3)

- 2 d ·3 c 1 b 5 b 7 d
- 2 tongue 1 brain 5 brain 3 brain 4 nose 7 fast 6 hearing
- **(3)** 1. / 7. 1
- i withdraw, reflex
  - 2 skin 3. nervous system
  - 4 breathe

- 1 Sensory receptors 2 Nerves 3 Brain 4 Spinal cord
  - 5. Reaction time & Reflex actions Tonque

  - .s. Touch sense
- 1 Stomach 2 Touch 3 Tongue
- Sensory receptors: They receive information from the surroundings. **Brain:** It translates and processes information gathered by the sensoru organs and sends a proper response.
- 1 Figure (2) 2 Figure (3) 3 Figure (1) 4 Figure (4)
- **0** a.5 b. 2 d. 1 e. 3
- Recause it translates information from the surroundings and tells the body how to react.
- 1 You blink as a reflex action.

#### Concept @ Lesson 🙆

- 1 d .2 C 3 b 4 b 6 C 7 C 5 a 12 C 11 d 10 c 9 C
  - 15 d 16 C 13 b 14 C
- 2 1 smell 2 shortage
  - 3. hearing 4 higher 6. vibrations 5 different
  - 7 high 8 thumb 9 echo
- 3 1 X 2 X 3 X 7 X

- 11 / 10 X
- 🕢 🐧 blind person's cane 🌸 Bats
  - sound 3 slaht
  - 5 Humpback whales
  - & smell
- # Smell 1 Colony
  - # Hearing 3 Touch
  - Scout ants 5 Nurse ants
  - 7 Soldier ants
  - 8 Humpback whales
  - 9 Echolocation
  - 10 A blind person's cane
- 2 Bats ♠ 1 Echolocation Man 3 Ants 6 Ants 5 Owl
- Hearing Sense: Humpback whales –

Bats

Smell Sense: Ants

Touch Sense: A blind person's cane

- 8 1 Figure (1) 2 Figure (1)
  - 4 Figure (4) 3 Figure (2)
  - 6 Figure (1) 5 Figure (3)
- .2 /
- 1 To tell them to search for food when the food is low.
  - 2. Because they search for food and locate it.
  - 3 To alert them in case of any danger.
  - 4 Because they depend on echolocation and their hearing sense to locate their prey.
  - 5 Because it helps them navigate their surroundings.

- 6 Because both of them produce high-pitched sounds and receive echo to locate objects.
- Nurse ants send a smelly message to scout ants to alert them to find food
  - 2 Soldier ants send a smelly message to other ants to alert them.
  - 2 They can't locate their preu.
  - 4 It turns into vibrations that can be felt by the person's thumb. ""

#### Concept © Lesson (1)

- 1 6 3 C 2 d 4 C 6 d 5 b 7 C 8 C 9 0 10 d 11 C 12 b 13 c 14 d
- I. structural
  - 2 night vision goggles
  - 3 different
- 4 nervous
- 5 Light 6 moon 7 more
- 8 better
- 9 cats
- 10 a mirror-like membrane
- 11 dim light
- 12 reflection
- 3: \$ 383144 V 2 X 5 X 6 X 9 1 10 / 11 X 12 / 13 X
- 1 Cats, humans
  - 2 moon, mirror 3 light, sound
  - 4 eyes, brain
- 🌎 🜗 Nocturnal animals
  - 2 Fishing cats
    - 3 Light
  - 4 Light source
- 128 Science Prim, 4 First Term

- 5 Night vision goggles
- (A) 1 Bat 2 Moon
- (A) 1 C 3 d (B) 1 b a
  - (C) 1 d 2 e 5 C
- 1 Figure (3)
  - 2 a.Figure (2), figure (1) b.Figure (1)
- Because they have bigger eyes and their pupils open wider than humans
  - 2' Because its eyes have a mirrorlike membrane that reflects anu light falling on it.
  - 3 Because it doesn't emit its own ght, but it reflects the sunjight falling on it
  - 4 To allow more amount of light to enter the eyes to see well at night.
- to I It won't see well at night. Or it will have a poor night vision.
  - 2 it is reflected on the eyes causing vision
  - 3 They will have excellent night vision Or they will see well at night

#### Concept ( Lesson @

1	1	d	2	b	3	d	4
	5	d	6	_	7	h	8

9 b 10 c 11 d 12 o

b

13 c 14 c 15 b 16 d

	17	b	18	a	.19	a	20 c			
	1	shada	W			glass				
B	2	alass	A	Water	(5	paper				
	2	glass 4 Water (5 paper most 7 transparent								
	9	opaque 9 Carton								
	10	small	11	scatte	rs					
	12	the so	me	9	13	smoot	h			
		a tree								
		gard.		Х	3	J	4 X			
3		1					78 x			
		P.		1			12 /			
			14		i a	•	12 /			
	13	X	120	V						
0	1	mirro	r			more				
				ent, opd	upc	e				
	á	shado	W							
A	1	Light	refl	ection						
V	2.	Trans	par	ent mo	iteri	als				
				materio						
				(shiny)		faces				
	5	Rough	า รเ	ırface						
	3	Shado	W							
1	<u></u>	Mirror	_		2	Huma	n body			
6		Lense								
4	_	Opaq			2	Opaqı				
V		Trans		ent	4	Transp				
A							<u> </u>			
0	1,			rent Me			155 -			
				- Clear			wood			
		Opaque Mediums: Rock - wood -								
	0	Skin -				A	Makail			
	Z			Surface						
				urface:	s:Cl	oth – W	vood –			
		Pape	r							
0	1	С	2	d	3	b	4 0			

- (in 1) a. opaque b. transparent 2 Figure (B) because wood is a rough surface that scatters the light rays falling on it in many directions. 8 Carton - Cloth - Aluminum foil 4 C.X b. 5 a. opaque b.a light source, an opaque object Because it allows most of the light to pass through. 2 Because it is an opaque object that doesn't allow light to pass through. 3 Because the mirror is a smooth surface that reflects light rays in one direction, but paper is a rough surface that scatters light in many directions. 1) They are reflected in one direction.
  - 2. A shadow is formed.

### Concept 🕲 Lesson 3

- 2 G 3 d 6 b 7 c
- ·2 · winged 1 chemical behavioral 3 structural
  - 5 sight 6 wings, mate
- 1 X 2 / 3 X 2 Human 1 Firefly 2 Animals 1 Firefiles
  - 3 Echolocation

- 6 1 c 2 a 3 d 7 1 (2),(3) 2 (1), (2) 3 (1) 4 (2) .5 (3) 6 (1)
- 1 To warn off a predator or to attract a mate
  - 2 Because humans can communicate through writing, while animals can't.
- They change their flash pattern to match that of the nearbu fireflies' group.

### Concept® Lesson @

- 2 d (3' b 4 b :7. d 8 d
- 1 Language 2 lighthouse 3 ears 4 codes
- 3 1 5 /
- 1 Code 2 Brain 3 Mirror
- 1 Fire alarm 2 Fireflies
- 2 d 3 a
- 7 a. Figure (2) b. Figure (3) C. Figure (1) d. Figure (4)
- 1 To attract rescue helicopters.
  - 2 Because they guide sailors by using flash codes.
- 1 The brain will send a response to your muscles to stop moving.
  - 2 I will know his feelings.

#### School Book Questions on Unit

- 1 ab 3. d 12 . C 5. b

Inhaled Air	Exhaled Air			
Rich in oxygen	Rich in carbon dioxide			
gas	gas and water vapor			

2

Structural Adaptation	Behavioural	
in Fennec Fox	Adaptation	
- Extra-large ears	- Living in burrow	Ú

- Ton fur

- Panting

3

Communication	Communication				
between Humans	between Animals				
- Reading - writing	- Echolocation				
- Cell phone / TV					

- True 2 False 3 False
  - 4 True 5 True 6 True
  - 7 False 8 False 9 False

10 True

- 4 j hearing 2: ears - brain
  - 3 digestive stomach respiratory
- Because cats are nocturnal animals that have a mirror-like membrane at the back of the eyes that reflects the light that falls on it
  - 2 Because bats depend on the echolocation property to locate their prey in complete dorkness.

#### Unit 2 Concept 1 Lesson (1) 3 C 4 d 2 d 7, a 8 6 6 d II b 12 C 10 C 9 b 15 c 14 b 13 d 2 pushing 1 engines 4 Pushing 3 force 6 pulling 5 more 8 quickly 7 pulling 10 leaf p 3 8 / 6 X 1 static - force - position 2 jet engines - increase 3 rockets - decrease 2 Pushing force Static object 3 Pulling force 4 Shockwave truck 5 Parachute 2 Lift the ball 6 1 Time 4 Normal trucks 3 Pulling force 7 1 c 4 d 3 h 8 (A) 1 4-1 2 7 4 2-3 3 2-4 (B) 1 Adam 2 longer 3 backward - forward 4 pushing - air 5 faster - longer 1 Push 2 Pull 3 Push ▲ Pull

- 1 Because a pushing force is moving an object away from you, while a pulling force is pulling an object towards you
  - 2. Because when the player kicks . the ball, the ball moves away from the player
  - 3 Because a jet airplane has a more powerful engine than a normal truck.
  - 4 Because it is fitted with three jet engines that help it move and reach record speeds by the pushing force of its powerful engines.
  - 5 To help the driver of the Shockwave truck to slow down it quickly.
- 11 The static object will move and change its position.
  - 2 The speed of the Shockwave truck will decrease quickly.
  - 3 The cart will move forward.
  - 4 The cart will move faster and cover a longer distance.

### Concept () Lesson 2

- 4 d . 3 0 1 d 2 C 6 C 7 a 8 a 5 b 10 d 11 d 9 a
- 2 gravity 1 unbalanced 4 pulling 3 balanced 6 greater 5 push
  - 8 pushing 7 pushing 10 unbalanced 9 longer
- 2 / 3 X 7 X 6 1 9 X
- 2 pulls downward 1 forward

- 3 pushed 4 position fixed Motion 2 Gravity 3 Pushing force 4 Pulling force 5 Tug-of-war game 6 Push force 2 Earth motion 3 Push force Balanced force 5 A sleeping cat 7 1 c 2' 0 3 d 4 b 8 Push Forces: 1, 3, 4, 7, 9, 12, 14, 15
- Pull Forces: 2, 5, 6, 8, 10, 11, 13
- 3 figure (2)4 pulling opposite

**b.** pushing

Balanced Forces: 1, 2, 4, 5
Unbalanced Forces: 3, 6

a pulling

- 1 Due to the gray ty that pulls the apples down towards the Earth's center.
  - 2 Because when the force that acts on the rope is unbalanced, the rope will move towards the greater force.
  - 3 Because when the force that acts on the rope is balanced, the rope will not move.
- 1 The static object will not move.
  - 2 The static object will move.

# Concept () Lesson (9)

0	1	a	2	b ·	3	С	'4	b
	5	С	6	b	7	С	8	С
	9	b	10	С	11	d	12	b

	13	d	14 d	-15:	a	
2	1	fricti	on	.2	decre	ases
	à	bala	nced	4	frictio	n
	5	fall	lown	6	stop	
	7	remo	in in motio	on 8	frictio	n
	9	greo	ter	10	longe	r
	11	push	lng			
0	1	X	2 X	-3	х	41
	5	1	61	.7	1	8 x
	9	Х	10 /	TF	Х	12 /
	13	χ.	14 /	15	X	
4	(A)	1	balanced	- opp	osite	

- 2. Unbalanced
- 3 decreases friction
- 4 increases
- (B) 1, faster longer
  - 2 slower shorter
  - 3 more bigger mass
- 5 1 Gravity 2 Friction 3 Force
- **6** Sound
- 7 1 b 2 c 3 d 4 a
- 8 Force 1: Pushing (moving) force Force 2: Friction force
- Car (A) is affected by a greater force because it covers a longer distance than car (B).
- The tennis ball covers a longer distance because it has a smaller mass than the basketball.
- Because friction acts in an opposite direction to the moving object.
  - 2 Due to the friction force that

- slows down the bike speed until it stops.
- 3 Because the wall acts with the same force on the car and in the opposite direction.
- Because the speed of the moving object is affected by the force acting on it.
- The speed of the bike will decrease until it stops.
  - The car will stop moving.
  - The toy car will move for a short distance
  - The kinetic energy of the toy car will increase.

### Concept Lesson 4

- 2 Force (1) energy
  - 3 doesn't move 4 more
  - 5 force 6 work 7 transfer
- 2 Work Force
- 2 C .1. d Because work is the force applied
  - by the boy to move the car. 2 Because the wall doesn't move.

- 5 d 11 b
- 1 potential · 2 kinetic 4 faster 3 less
  - 6 potential 5 Potential energy 8 consumes 7 kinetic
- 16: X

10 /

- 🚹 1 speed height
  - 2 electrical energy potential energy - kinetic energy 3 motor
- 1 Potential energy
  - 2 Kinetic energy -
  - 3 Kinetic energy
  - Electrical energy
  - 5) Chémical energy
- Object's speed
  - 2 Object's height
- '1 e 2 d · 3 b
- 1 Kinetic energy
  - 2 Potential energy

  - 4 Electricity motors
- 1 Because as the height of the object increases, its stored potential energy increases.
  - 2 Because the stored potential energy is converted into kinetic energy.
    - 3 Because electricity helps the cars

of a roller coaster to move up the ramp.

- 1 The stored potential energy will increase
  - 2 The stored potential energy is converted into kinetic energy.
  - 3 The stored potential energy will be maximum.
  - The roller coaster cars will have no energy

# Concept 2 Lesson 2

- 1 1 c 2 a 3 a '4 c
- 2 potential 2 becomes zero 3 decreases 4 potential
- ③ 1 ✓ 2 ✓ 3 X · 4 ✓ 5 X 6 X 7 X 8 ✓
- operation kinetic
  - 2 decreases increases
  - 3 Light
- 6 1 Potential energy
  - 2 Kinetic energy 3 Force
  - 4 Work
- (3) 1 b 2 a 3 c
- Chemical energy
- 8 1 potential kinetic
  - 2 Potential
- 1 Because the book on the table stores potential energy.
  - 2 Because the stored potential energy is converted into kinetic energy

3 no

- 3 Because kinetic energy transfers from yor foot to the ball, so it moves.
- 1. The potential energy will increase

- 2 The potential energy will decrease
- 3 The ball will move as it gains kinetic energy.
- A The potential energy will increase

# Concept 2 Lessons 3 and 4

- 1 1 a 2 a 3 c 4 d 5 c 6 d 7 c 8 b 9 b 10 c 11 d 12 a
- h chemical

13 C

- 2 Chemical energy
- 3 washing machine
- 4 different 5 sound
- 6 electrical 7 electric lamp
- ③ 1 X 2 ✓ 3 ✓ 4 ✓
  - 5 / 6 x 7 / 8 /
  - 9 / 10 / 11 X
- 1 A gas oven2 kınetic
  - 3 Sound 4 potential
- 6 1 gravitational
  - 2 increases speed
  - 3 potential kinetic
- 1 Potential energy
  - 2 Kinetic energy
  - 3 Potential energy
  - 4 Electrical energy
  - 5 Light energy 6 Sound energy
  - 7 Gravitational potential energy
  - 8 Electrical energy 9 Radio

1	1	b	<b>2</b> d	3	а	4	С
8	1	Elec	ctric heater	2	Radio		

<b>9</b> 1		
Tool	Door bell	Hand bell
Energy Used	Electrical energy	Kinetic energy
Energy	Sound	Sound
Produced	energy	energy

Energu Energy Tool Used Produced Chemical Kinetic Normal car energy energy А саг Chemical Kinetic operated by energy energy a remote A spring-**Potential** Kinetic powered car

energy

energy

- (I) Kinetic Energy: 1, 3 Potential Energy: 2, 4, 5, 6
- n Chemical b. electrical c. kinetic
- 1 Because electricity is a form of energy that moves in wires.
  - 2 Because the TV produces light and sound energies.
  - 3 Because kinetic energy is converted into thermal energy.
- 1 The electrical energy is converted into light and thermal energies.
  - 2. The electrical energy is converted into kinetic energy.
  - 3 The chemical energy is converted into light and thermal energies.

#### Concept (3) Lesson 🕦

A Of d

41	4	-	-	-	-	~	W
5.	d	6	d	7	b	8	d
9.	b	10	С	11	b	12	C
13	С	14	С				
H	х	2.	1	3	Х	4	X
		6	X	7	1	8	X
9.	1	10	1	11	X		
	9.13	5. d 9. b 13 c	9 b 10 13 c 14 11 x 2. 5 √ 6	9 b 10 c 13 c 14 c	5. d 6 d 7 9 b 10 c 11 13 c 14 c 11 x 2. J 3 5 J 6 x 7	5. d 6 d 7 b 9. b 10 c 11 b 13 c 14 c 11 x 2. \( \) 3 x 5 \( \) 6 x 7 \( \)	5. d 6 d 7 b 8 9 b 10 c 11 b 12 13 c 14 c 11 x 2 \ 3 x 4 5 \ 6 x 7 \ 8

- 2 · Seatbelt Cricket Wrecking ball 3 Airbag 5. Vents (holes)
- 2 more 1 less nulon, steel 3 opposite
- 2 kinetic 3 Sound 5 airbag 3 car 4 gas 7 deflate 6 suddenly 9 airbag 8 automatically
  - :11 energy 10 quickly 13 more 12 direction 14 energy
- A Bike 2 Tires 1 b, c 2 a, b 3 C, C 3 d 2 0 0.3
- 1 a. A moving train b. A moving motorbike
  - c. A moving bike d. Yes, because any moving object has kinetic energy.
  - 2 a. The car, because it has less mass.
    - b. The truck
  - 3 a, wooden bat
    - b. kinetic. bat, ball
    - c. increases, different
  - airbag and seatbelt

- Because the truck has more mass than the car
  - 2 Because it has more speed and more kinetic energu.
  - 3 As the seatbelt prevents the possenger from moving forward when the car stops suddenly, and the airbag absorbs the car's energy and slows down the driver's speed during a collision.
  - 4 To slow down the driver's speed and absorb the car's energy during a collision.
  - To let the driver get out of the car.
- 1 The truck causes more damage than the car.
  - 2 Kinetic energy transfers from the bat to the ball causing its speed to increase and move in a different direction

#### Concept 8 Lesson 2

- 1 d 2 b 4 C 5 a 8 d 9 d 10 C 12 C 11 d 8 X 7 X
- 2 increases 3 same
- Speed 2 Speed 3 Second or hour
- 1 speed 2 3 m/s 3 faster 4 longer 5 physical . 6 more increases 2 less
- 3 higher
- Direction 12 · Kg 3 Meter

- (1) 1 d 2 a 3 b 2 Car (B) 1 Car (A) 10 1 B, D 2 D
- 1 a, slower, decreases b. faster, increases
  - 2 Car (B)
- Distance Speed = Time = 5 m/sec
  - Distance 2 Speed = = 100 km/hr
- Because the speed is the covered distance by the object in a unit of time.
  - 2 Because some of the kinetic energy is converted into sound and heat energies.
  - 3 As by increasing the speed. kinetic energy increases and the object exerts more force during collision causing more damage
- 1 Its speed increases
  - 2 Its speed decreases.
  - 3 Its kinetic energy decreases.

#### Concept (3) Lesson 🕄

1	1	d	2	С	3	a	4	С	
	5	a	6	d	7	d	8	C	
2	1	X	2	X	3	1	4	х	

- kinetic 2 more 3 kinetic
- 1 Collision 2 Mass 1 opposite 2 faster
- 1 a. car, traffic lights b. truck c. bike

- 2. Figure (1): the opposite direction
- 1 It will result in less damage that can be repaired.
- 12 It will result in a severe damage that can't be repaired.

	Cont	<b>(P</b> )	10	
0.	- Juli		4	

- 1 c 2 c 3 c 4 b 5 a 6 b 7 c 8 c 10 b 11 d 12 c
  - 13 b 14 d
- 2 1 x 2 \ 3 \ 7 x 8 \
  - 9 x 10 / 11 / 12 x
- 3 I slower
- 2 Kinetic
- 3 more \ .4 slightly
- 5 potential, kinetic6 sound, thermal
- 7 decrease, stop
- 8 decreases
- 1 b 2 a 3 c
- 5 1 Figure (2) 2 Figure (1)
  - 3 Figure (3)
  - 4 figure (3), figure (2)
  - 5 figure (3), figure (1)
- 6 a. 2 b. 4 c. 1 d. 6 e. 3 f. 5
- Because it exerts more force as it has a bigger engine.
  - 2 Because it has more mass.
  - 3; As part of the kinetic energy changes into sound energy during a collision and some is changed into thermal energy due to the friction between Newton's cradle parts.

- As energy isn't not destroyed, but it is changed into sound and thermal energies
- 1 Its kinetic energy increases
  - 2 Its kinetic energy increases.
  - 3 He will have some injuries and will survive
  - 4 His life may be in danger
  - 5 It stores potential energy.
  - 6 Its potential energy changes into kinetic energy.
  - 7. Kinetic energy transfers to the rest of the balls, and the last ball moves.
  - 8 Their kinetic energy decreases gradually until they stop.

# School Book Questions on Unit 2

- 1 d 2 c 3 d 4 b 5 b 6 a 7 c 3 f 1
- (A) Unbalanced(B) To the left
  - 2 Car(A):

Speed = 
$$\frac{\text{Distance}}{\text{Time}} = \frac{100}{20} = 5 \text{ m/s}$$

Car(B):

Speed = 
$$\frac{\text{Distance}}{\text{Time}} = \frac{300}{20} = 15 \text{ m/s}.$$

Car (B) has the highest speed.

- 3 potential kinetic
- 4 The truck, because the mass of the truck is bigger than the mass of the car.
- 3 1 b 2 c 3 e 4 c

# **Revision Model Answers**

# Unit 1 Concept 0 1 a 2 c 3 t 5 a 6 b 7 t

3 b	A C
7 b	8 c
11 d	12 d
18 d	16 a
19 C	<b>20</b> d
23 d	24 a
27 c	28 0
31 b	
	3 b 7 b 11 d 15 d 19 c 23 d 27 c 31 b

- 2 structural
  3 cool
  4 salt water
  5 structural adaptation
  - 6 kapok
  - 7 teeth and tongue
  - **B** Esophagus
  - 9 carbon dioxide 10 digestive
  - 11 respiratory
- 12 respiration
- 13 exhalation
- 14 oxygen
- 15 Air pollution

1      ✓	2 /	3 X	·4 X
5 X	6 X	7. 1	8 🗸
9 X	10 🗸	11 X	12 X
13 🗸	14 🗸	15 ✓	16 🗸
17 X	18 X	19 🗸	20 ✓
21 X	22 🗸	23 X	24 X
25 X	26 ✓	27 X	28 🗸
29 X	30 X	31 X	32 ✓
33 X	34 X	35 X	

- AdaptationCamouflage
  - 3 Structural adaptation
  - 4 Countershading
  - 5 Digestion process
  - 6 Draphragm 7 Amphibians

- 8 Gills 9 Alveoli 10 Penguln
- 5 J. a. water Iliy
   b. Respiration
   c. buttress roots
   2 a. Fennec foxes
  - b. Penguins, Arctic foxes
  - c. bull shark
- (A) 1 d 2 a 3 b A c (B) 1 c 2 e 3 a 4 b 5 d (C) 1 c 2 b 3 a (D) 1 c 2 b 3 a
- Arctic fox 2. Agama lizard 3 Gills . 4 saliva
- 8 1 B 2 B 3 S 4 S
- 1 camouflage
  - a. Inhalationb. Exhalationc. It contracts and movesdownward.
  - 3 Digestive system
  - 4 to search for insects and look out for enemies at the same time.
  - 5 Cold climate, to keep their bodies warm.
  - 6 absorb a large amount of sunligh
  - 7 cold
  - 8 Panther chameleon, kapok tree
- To stay warm in cold climate.
- The chest size increases and oxygen gas enters the lungs.

			6	oneo‡			
						b	.4 c
A	1	d	3		7	_	.8 b
v	5	C	6		11		12 b
	- 1	a	10		15		16 a
	13	d	14		19		20 a
	17		18				
	E	respo	nse	time	.2	Jerboa	
0	3	brain			4	nearing	9
	É	nervo	US			Mongo	
	7	the se	nsc	ory org	ans	to the	brain
	8	hearir	ng s	ense	9	nervou	JS
	10	spinal	60	rd	Ĥ	cane	
	12	Whale	25		13	mating	)
		hearir					
		smelly		*	16	Ants	
A	7	1	2	1	3	X '	4 X
67	5		6	Х	.7	X	8 🗸
	9		10	1	11	Х	12 🗸
	13		14	Х	<b>15</b>	χ.	16 🗸
	17		18	1	19	1	20 🗸
	21		22	1	23	Х	24 ✓
•	1	Brain		-	2	Echolo	cation
4	3		rna	ıl animo	als		
	A	,		ecepto			
	5	React					
	6			system			
		Jerbo		ogorom		Scout o	nts
		Nurse		ts		Touch	
				(reflex			
•	-		- server			Echolo	
9		Eyes			4	ECHOIO	cution
	3	Ants					
0	(A)	1 b	2	2 C	3	a	
	(B)	1 c	3	2 d	3	е	4 b
		<b>5</b> a					

				Mo	odel Ar	swers o	
•		A reflex action occurs. It can't Jump for a long distance and can't escape from Its enemies.					
8	2	Dolphins use echolocation property, where they produce sound waves that return back to the dolphins' ears when they hit the prey.  Structural adaptation					
			Conce	pt	9		
•	13	ь ф с	.2 · d 6 b 10 d 14 c 18 a 22 b	7 11 15	d b b b c	4 c 8 a 12 b 16 c 20 d	
2	3	wider transparent opaque rough			2 Fire 4 same 6 Carton 8 codes		
3	13 17	У	.2 X 6 \(  \) 10 X 14 \(  \) 18 X	11 15	× / / / /	4 X 8 X 12 \( \sqrt{16} \) \( \sqrt{20} \(  \)	
4	3 4 5 6 7	Light 2 Eye Light sources Night vision goggles					
5		Brick 2 Moon Glass cup 4 Mirror					
6		Opaqı Transp			Opaqı Transı		

- Rock → Opaque
  - 2 Glass, Window Transparent
- Mirror, Metal → Smooth materials
   Cloth, Wood → Rough materials
- (A) ¹ c 3 b 3 d ¾ d
   (B) ¹ c 3 a 3 b
   (C) ¹ c 3 d 3 a 4 b
- 1 Opaque 2 Transparent
- Figure (B), because it scatters light rays in different directions.
- Carton cloth
- Because it doesn't emit its own light, but it reflects the sunlight falling on it.
  - Because it emits its own light.
  - Because they have bigger eyes and their eyes' pupils open wider than those of the humans eyes.
  - Because they have a mirror-like membrane that reflects any light falling on it.
  - 5 Because humans eyes don't have a mirror-like membrane like that in cats' eyes.
  - 3 Because glass is a transparent object that allows light to pass.
  - 7 Because an opaque object doesn't allow light to pass through.
  - 8 Because opaque objects may absorb or reflect the light falling on them.
- ! It forms a shadow.
  - 2 Light rays are scattered in different directions

#### Unit 2

# Concept ()

- 2 in friction in the sumbalanced in the sumbalance in the s
- 3 1 / 2 x 3 / 4 x 5 / 6 / 5 x 8 /
- Gravity Force
- **5** 36 d 42 c 3 a 1€ b
- Car (A), because it moved a longer distance than car (B).
- ♠ Gravity
- The bike's speed decreases till it stops.

### Concept 2

- 1 k-d 2 a 3 b 4 d 5 b 6 a 7 c 8 c 9 d 10 a 11 a 12 c
- 2 : consumes 3 chemical
  - 3 Chemical energy
    - 4 decreases 5 Gravitational
    - 6 work 7 Energy
      - 8 light ? potential
      - 0 sound
- 8 1 ✓ 2 ✓ 3 X A· ✓
  5 ✓ 6 X 7 X 8 X
  9 ✓ 10 ✓ 13 ✓ 32 ✓
  13 X 12 ✓ 35 ✓ 06 ✓
- 1 Kinetic energy Energy
  3 Work 4 Kineticenergy

Gravitationa potential energy 6 1 sound 2 electrical \* kinetic 4 light (9 chemical & light 6 1 b E 0 1 Chemica energy 2 Light energy 3 Floshlight Concept 6 3 b 14 d 2. 0 10 C 7 d 8: b 6 a 5 d 12 C 11 c 10 d 9 C 13 b 14 c 15 C 16 d 2 sensors airbag 👔 airbag 4 direction energy 5 physical 6 more 7 big engines 8 speed 10 5 km/hr <sup>2</sup> fuel 12 Airbags 12 Distance + Time 13 kinetic 14 potential 11/2/ 3 X 8 X 6 / 7 X 5 X 9 X 10 / 4 Collision 2 Seatbelt 3 Airbag 4 Wrecking ball 5 1 b 2 c 5 d 6 1. Seatbelts and airbags 2. Speed =  $\frac{\text{Distance}}{\text{Time}} = \frac{200}{2}$ - 100 km/hr Distance 600 3 Speed = Time

 $= 100 \, \text{km/hr}$ 

4 Car (B)

# Government Eyams Model Answers

1 Cairo - Official Language Schools

#### Question 1

- (A) 1 c 2 c 5 b 4 o
- (B) Car (C)

#### Question (?)

- (A) 1 x 2 x 3 / 4 x 5 /
- (B) 1 The moon 2 Fref & Tashlight

#### Question 🕙

- (A) 1.1 c .2, a 3, b
- (B) Animals have a super sight sense
  Fishing cat
  Animals have a super hearing sense
  Dolphin and bat

#### 2. Cairo - Al-Azhar Al-Sharif

#### Question 1

1 b 2 a 3 b 4 d

#### Question 🕘

1 X 2 X 3 \ 4 X 5 \

#### Question 🕙

1 b 3, d 3 c 4 a

#### 3. Giza - Al-Azhar Al-Sharif

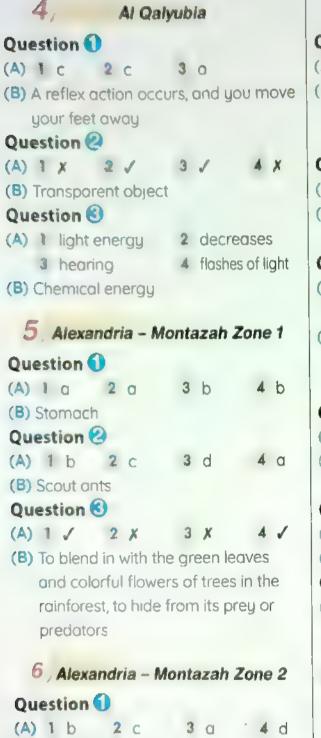
#### Question 🕕

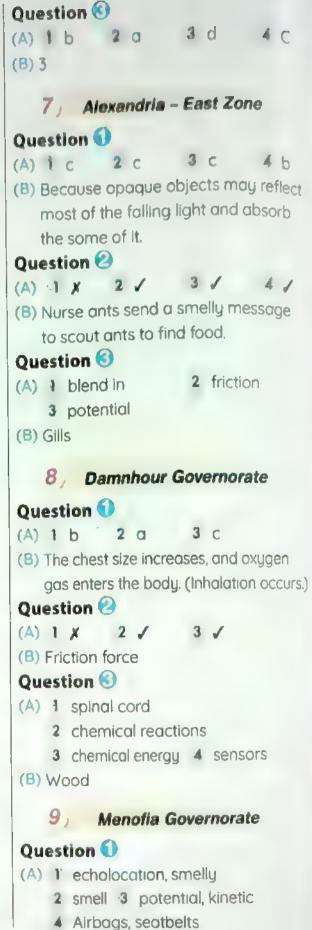
- (A) 1 a structural ? mamma s
  - 3 Eyes and brain 4 Push
  - 5 friction force
- (B) 1 Alveoli 2 Touch
  - 3 Gravitational potential energy

#### Question 🕗

(A) 1 x 2 √ 3 √ 4 √ 5 x

### Model Answers 2 Lunas (B) 1 Saliva 3 Dolphins 4 Firefles 5 Light energy 4, Al Qalvubia Ouestion 1 (A) 1 c 2 c uour feet awau Question @ (A) 1 x 2 / (B) Transparent object Question 🕙 (A) I light energy 2 decreases 3 hearing (B) Chemical energy Question 1







3 X

(B) Camouflage Question 🙆

(B) Diaphragm

(A) 1 X 2 /

(B) Speed = Distance ÷ Time = 400 ÷ 2 12 Mansoura Governorate - Model (8) = 200 km/hr. Question 2 1 brain (A) 1 b 2 b 3 b 3 Gravitu (B) Because the lenses are transparent materials that allow light to pass through. Question (3) (A) 17 X 2 V 3 V .4 X 1/ (8) It can't hop for long distances, so it 5 X con't escape from its enemies. 10 Kafr El-Sheikh Governorate 1 c 5 h Question () (A) 1 b 2 b 13, (B) The bike's speed decreases till it stops. Question 2 (A) 1 X 2 X (B) Reaction time Question (3) (A) j head 2. producing light (B) Brain 4 sound 3 truck (B) Lungs 11 Mansoura Governorate - Model (A) Question 1 .2 150 cm (A) 1 codes 14 3 Camouflage 4 heart (B) Potential energy Question 😢 (A) 1 x .2 / 3 / 4. X (B) Because their eyes have a mirrorlike membrane that reflects any light falling on them. Question (3) (A) 1 Increases 2 Airbag, (seatbelt) 3 Energy 4 light (B) Figure (A) is an opaque object. Figure (B) is a transparent object.

### Question 1 '2 Metals 4 kinetic energy of the object increases 5 the echo Question (2) 2 X Question ( 2 d Fayoum Governorate **Ouestion** (A) 1 b 2 a · 3 c · 4 a (B) a mirror-like membrane Question (2) (A) 1 X 2 J 3 X **Ouestion** (3) (A) 1 c 2 d 3 a (B) Figure (A) is an opaque object. Figure (B) is a transparent object. Dakahlia Governorate Question 1 (A) 1 a 2 a 3 b (B) To hide among the colorful rocks. **Ouestion** (A) 1 / 2 / · 3 / · · .4 x (B) They can't locate their preys at dark. **Ouestion** (6) (A) 1 c 2 b (B) 1 brain 2 structural (C) Speed = Distance ÷ Time = 500 ÷ 5 = 100 km/hr.

(144) Science Prim. 4 - First Term

### 18. Red Sea Governorate Beni Suif Governorate Question ( Question 1 2. Carton paper (A) 1 inhalation (A) 1 alls 2 pitch digestive 4 potential 3 heart 4 gravity (B) Behavioral (B) Because they have a mirror-like membrane at the back of their eyes Question (2) that reflects the light falling on it. (A) I sharp spines 2 Carton 3 Gravitu 4 brain Question (2) (B) It will not move (A) 1 eye 2 kinetic 3 esophagus 4 light Question (8) (B) It is reflected in the same direction. (A) 1 / ,2 X 3 / (f) Energy Question ( (A) 1 X ·2 ✓ 3 ✓ 16. Port Said Governorate (B) Structural adaptation Question 1 19) Sohag - Al-Azhar Al-Sharif (A) 1 b 2 d 3 C 4 b (B) Echolocation Question 1 (A) 1 b · 2 d Ouestion 🙆 (B) 1 X · 2 ✓ (A) 1 X 2 / 3 X Question 🙆 (B) An owl (A) 1 colored scales 2 whale Question (6) 3 structural (A) I kapok 2 digestive (B) 1 brain 2 Gravity 4 kinetic 3 Airbag .3 Transparent (B) Structural adaptation Question (3) 1 c 2 a 3 b 17/ Ismailia Governorate Question 1 20, Assuit 2 nervous (A) 1 short Question 1 3 gravity. 4 light (A) 1" long and thick 2 nervous (B) To jump for long distances to escape 3 gravitu ♠ potential from its enemies (B) Behavioral adaptation Question 🕙 Question 😢 (A) 1 Transparent materials (A) 1; X 2 X 3 / 2 Collision 3 Adaptations (B) Transparent object 4 Friction force (B) A shadow is formed Question 🕙 (A) 1 exhalation 2 unbalanced Question (3) 3 hearing (A) 1, d 2 a 3 a 4 D (B) Agama lizard (B) Bull sharks



### **Exams 2023**

# Million 1 1

		Annual Control of the
Choose	et.	correct answer:
	rus	correct answer:

In order for the human being to remain alive, there is an integration between the senses and the interact with the surrounding environment

a. digestive b. respiratory

c. nervous d. circulatory

pant to lower their body temperature.

a. Whales b. Bats

c. Lions d. Foxes

When the driver stops suddenly, all the passengers will move

a. upward b. forward

c. backward d. downward

@ Each of the following is considered a source of light, except

a. the fire b. the sun

c. the lamp
d. the moon

Raising the thumb up and lowering it down are kinds of

a. colors
b. codes

c. waves
d. lights

### or (x):

The respiratory system is responsible for the entry of an incompany oxygen gas into the body.

Foxes have a strong sense of hearing.

The moon is a source of light.

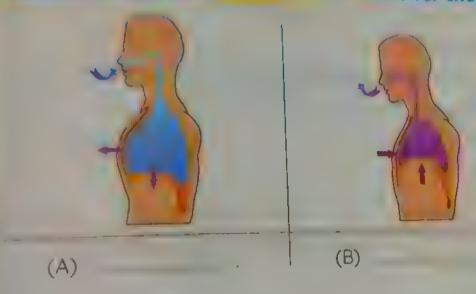
Red and green traffic lights are codes The driver should drive as fast as possible to avoid Calculate the speed of a train that covers 600 km in Which of the following surfaces represents the reflection of light rays from a wooden spoon and why? (B) (A)

### Choose the correct answer:

ce Prim. 4 - First Term

energy affect	ts the sensory receptors in the
coesine) yraen)	
a Sound	b. Kinetic
Clight	d. Magnetic
1 he eye sends messages	to the through the nerve
a spinal cord	b. heart
c. lungs	d. brain
cover(s) body o	f an Arctic fox.
a Thick for	b. Heavy hair
c. Heavy skin	d. Many feathers
Animals can communicat	e with each other by
a. talking	b. sound
c. writing	d. reading
Moving a box away from	you represents force.
a. magnetic	b. gravitational
c. pulling	d. pushing
or (X):	1 2
	not freeze because they have
a layer of fat.	(
Bats use their sense of hea	aring to avoid danger. (
	ect that allows light to pass
through.	/ I was anows light to pass
	taste by their sense of smell. (
The airbag deflates at the	same speed as it is inflated. (

Label the following two processes, then answer the questions:



- 1 What happens to the diaphragm in figure (A)?
- What happens to the chest size in figure (B)?

Science Prim. 4 - First Term • 1

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O compression of the contract we contract send or the code of the

Annote from the notion of 
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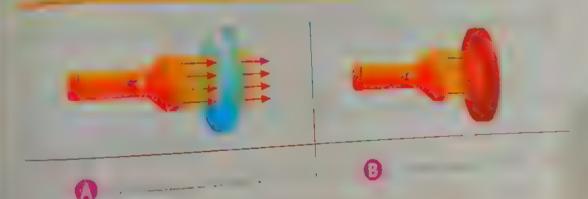
Pat (, ) = (:)

thes see sesses.

- Speed is the distance covered by an object of the state o
- The seatbelt is used to decrease the special treasurer with the property of th
- Study the following figure, then choose the correct word:

  (faster slower increases decreases remains common to the correct word)
  - a. By using a smaller ball on the same ramp.
    the object's speed as the object becomes
  - b. By increasing the number of books, the object's speed as the object becomes
- Look at the path of the light rays in pictures (A) & (B).

  Determine which of the two objects is opaque and which is transparent:





# Medal Lyam) 4

### Choose the correct answer:

Fish	extract (	oxuden	out	of the	water	using	their
------	-----------	--------	-----	--------	-------	-------	-------

a. skin

c. lungs d. fins

Which of the following allows light to pass through its

a. A rock

b. The moon

c. Wood

d. Glass

b. gills

make the airbag inflate and fill with gas to see a soft cushion.

- a. Brakes
- b. Gas pedals
- c. Sensors
- d. Speedometers

Honeybees and humans are similar in communication that

a. sound

b. smell

c. light

d. movements

When you put your hand on a hot surface, the brain sers message to the muscles and the action that comes from limmediately after it is to

- a. keep placing your hand
- b. feel pain
- c. pull your hand away from the hot object
- d. do nothing

### Choose the correct answer:

1 The echo sound feature depends on the

a. sight sense

b hearing sense

c. taste sense

d. touch sense

2 A static ball on the

has no energy

a. ramp

b table

c. ground

d chair

A surface that reflects light rays in the same direct on s

a. smooth and shiny

b. dark with impurtes

c. transparent and clean

d. rough and dark

Mumpback whales use singing for

a. heating

b. hiding from enemes

c. communication

d. having fun

Adaptation includes changes that

in the environment

- a. reduce chances of survival
- b. improve species survival
- c. reduce life span for individuals
- d. reduce reproduction process

### Put (/) or (X):

Plants have two types of adaptation, structural and behave

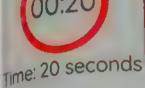
Animals can use more than one sense to communicate with each other.

All nocturnal animals need a source of light to see

Force affects an object and changes w.

From the following figure Calculate the speed of the solar vehicle:









### Classify the following words in the table:

Lungs - Tongue - Nose - Anus - Brain - Avec - Lie - Neives -Stomach - Spinal cord - Small intestine

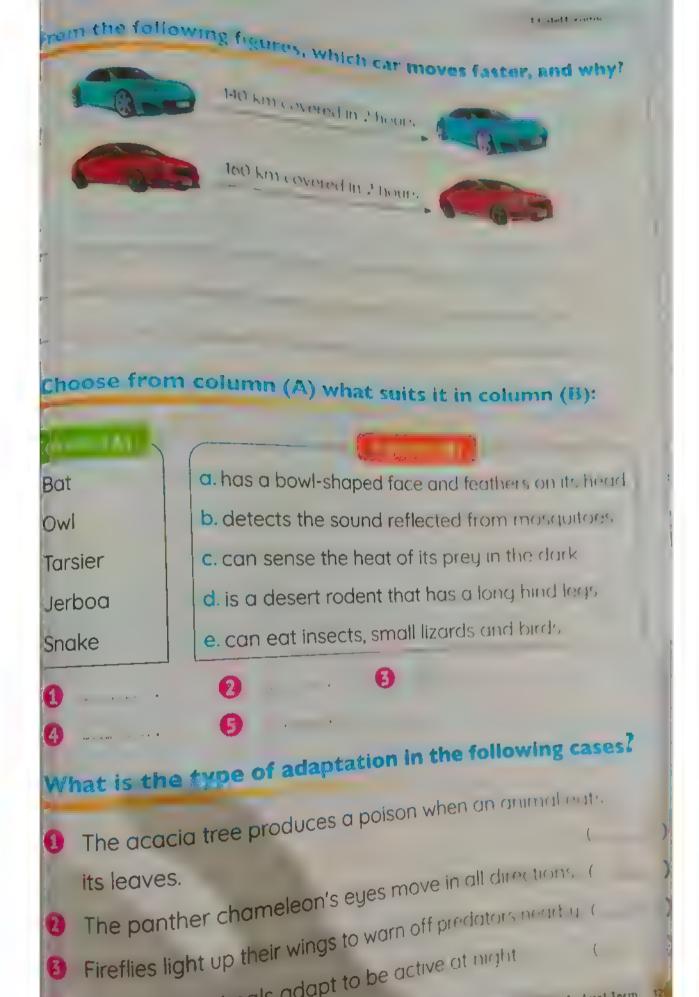
Digestive System

Respiratory System Nemous System

# Build Living 6

### 1 Choose the correct answer:

- 1 The dolphin can locate its prey through its sense of
  - a smell
  - b. hearing
  - c sight
  - d. taste
- Which of the following is a source of light?
  - a. The eye
  - b. The moon
  - c. Fire
  - d. A mirror
- 8 Animals can communicate with each other through
  - a. sounds and lights
  - b. talking
  - c. reading
  - d. writing
- The stomach is a part of the digestive system that
  - a. chews food
  - b. converts solid food into liquid
  - c. absorbs nutrients from food
  - d. delivers food into the esophagus
- In the tug-of-war game, the two teams
  - a. push the rope in the same direction
  - b. pull the rope in opposite directions
  - c. push the rope in opposite directions
  - d. pull the rope in the same direction



Nocturnal animals adapt to be active at night

Science Prim 4 First form

### Choose the correct answer:

energy is transferred between two objects divi-

10 800

J. Sound

b. Thermat

c n netc

d. Electrical

Ocreyes help us see what's around us. What is the organ tra responsible for perceiving what we see with our eyes?

3. The brain

b. The lungs

c The esophagus

d. The stomach

What feature of light helps you see yourself in the mirror?

a. Refraction

b. Ray length

c Short rays

d. Reflection

The different languages are considered

a codes

b. lights

movements

d. drawings

What happens to living things that can't adapt to the conditi of their environment?

- 3. Their number increases.
- They can't stay in the environment.
- c. They keep their number constant.
- d They can survive in the environment

### t (/) or (X):

The acacia trees grow in the Amazon forest Morse code can be detected by sight sense or hearing sense.

		<b>,</b> ,	6	~ ×			
0	Some animals can so Codes are very usefutalk like humans.	ee at night, suc ul for bees and	h as a wild cat. ants because t	ModelExoma ( hey can't	•		
9	Distance covered by kilograms.	an object can	be measured in	n meters o	) or )		
Cla	issify the following ng organism uses	to communi	cate and sur	vive:			
	Dolphins – Snakes – Bees – Panther chameleon – Ants – Bats – Egyptian mongoose						
	Hearing	Smell	Touch	Turks Cor			

Movement	Hearing Sense	Smell Sense	Touch Sense	Taste Sense
, and the statement of the state of the stat	pr de 1 Ne 1	* Secret recommendate (property).	<b>~</b> ▼	
grade dall and an all the second and an analysis of the second analysis of the second analysis of the second and an analysis of the second and an analysis of the second and an analysis of the second and analysis of the second and an analysis of t		3 4 100000 - 3000 - 111	***	

A train takes five hours to cover a distance of 200 km. Find its speed.

### Choose the correct answer:

Humpback whales communicate with each other through, sense of

a. sight b. hearing

c. smell d. touch

An object's mass affects its ...........

a. potential energy only

b. kinetic energy only

c. both kinetic and potential energies

d. neither kinetic nor potential energies

10 The roots of the palm plants help them to ....

a. stand strong against the wind

b. reach the underground soil

c. fix the plants in the soil

d. all the previous

The \_\_\_\_ is an animal that can escape from enemies because of the length of its hind legs.

a. Arctic fox
b. jerboa

c. penguin d. panther chameleon

Adel wanted to make a suitable box through which he cou assist what was inside without having to open it. What material shows be used?

a. Wood

b. A mirror

c. Carton

d. Glass

Classify the following words in the table:  Mirror - Wood - Glass - Metal - Plastic  Shiny Surfaces Rough Surfaces Transparent Surfaces  Choose from column (A) what suits it in both column (B) & (C):  Living Organisms  Humans  Fireflies  Bats  Depend on  a. light energy only. b. sound energy only. c. sound and light energy only. c. sound and light energy only.	1 the object the biggest of Moving an o	om complex to simple distributed in slates the code after reduct takes the longest time mass.  bject toward you is considered toward with the considered in the code after reduction to the considered in the code after reduction to the code after reduction	ceiving digestion ( ceiving it. ( con the ramp has ( dered a pushing force.
Choose from column (A) what suits it in both column (B) & (C):  Living Organisms Humans Humans Fireflies  Rough Surfaces  Transparent Surfaces  Depend on  a. light energy only. b. sound energy only. c. sound and light energy only. c. sound and light energy	M	irror - Wood - Glass - Me	table:
Choose from column (A) what suits it in both column (B) & (C):  Living Organisms Humans Humans Fireflies  Depend on  a. light energy only. b. sound energy only. c. sound and light energy only. c. sound and light energy	Shiny Surfaces		
Communication Organisms Humans Humans b. use Morse code. b. use Morse code. c. sound and light energy only. c. sound and light energy only.	Chanse from	column (A) what su	lits it in both colum
	(B) & (C):		

### Revision

# Makalan 9

### Choose the correct answer:

- The rope in the tog of war game moves when the forces octing on it are
  - व र्वाववा
- **b**. balanced

c unbalanced

- d. equal zero
- Which of these is an example of camouflage?
  - a Camel's broad feet
  - b. Camel's hump
  - c. Powerful parrot wings
  - d. The fox is golden like its environment.
- Trattic lights depend on the sense of sight in communicator as
  - a. fireflies

b. dolphins

c. ants

- d. bats
- When light is reflected off a surface in different directions, the surface is
  - a. transparent

b. smooth

c. rough

- d. opaque
- Sameh drives his bike, and while he hears a car behind him turns away so as not to hit it. The system that received a same making Sameh realize that is
  - a. the nervous system

b. the respiratory system

c. the digestive system

d. the circulatory system

### ut (/) or (X):

The fur that some animals possess to protect them from the cold is a behavioral adaptation.

## Choose the correct answer:

- One of the adaptations that help an animal protect itself from enemies is
  - a. blending in

b. extinction

c. immigration

- d. reproduction
- is from the opaque objects.
  - a. Glass

b. Carton

c. Plastic

- d. Air
- The system helps us to translate messages that confrom our surroundings, such as smells and sounds.
  - a. respiratory

b. digestive

c. circulatory

- d. nervous
- Sending smelly messages when there is a shortage of food sthe function of
  - a. queen ants

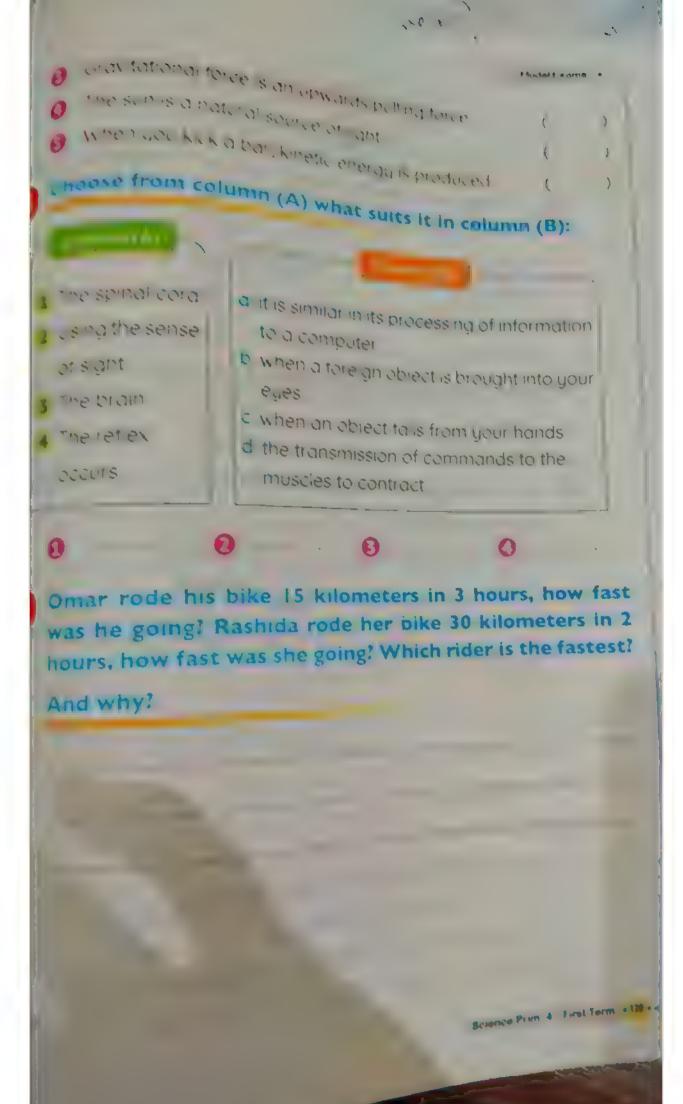
b. nurse ants

c. scout ants

- d. solider ants
- To calculate the speed of the runner, we use the rule:
  - a. Speed = distance time
- b. Speed = distance x time
- c. Speed = distance ÷ time
- d. Speed = distance + time

### ut (/) or (X):

- Some animals that live in the cold have long ears to help them to maintain their body temperature.
- The nervous system works separately from the five senses.



## Madd Sem 11

### Choose the correct answer:

- Cats' eyes are adapted to night vision due to the presence of the behind their eyes.
  - a. wide eyes
  - b. eye pupil
  - c. tapetum lucidum
  - d. eye lens
- Minetic energy is the energy gained by an object due to its
  - a. position

b. shape

C. motion

d. size

- What carries the message from your eyes to your brain when you see something?
  - a. Nerves

b. Muscles

C. Veins

d. Glands

- A blind person's cane and \_\_\_\_\_ emit high-pitched sounds that bounce off form echo.
  - a. lizards
  - b. bats
  - c. bull sharks
  - d. polar bears

What is adaptation?

- a. The process by which new species appear.
- b. A form of pollination for trees.
- A feature owned by living things to help them survive.
- A process of getting rid of harmful substances in living things

put (. ) or (x):	throught areas	
Animals diagramation		
Animals diagramational management and an animal and animal and animal and animal and animal and animal anim		
Merce visital Hiller fort.		
Reflex is the time taken for the bedy to receive	(	)
All objects groups	(	
All objects around us move at different spends		)
TOOLO COLO	(	
Food stays in the stomach for a few minutes	ots (	)
Complete using the following words:	(	)
(Penguins - Owls - Bats - Bull Sharks - Fennec foxes	- Polar fox	es -
Panther chameleons)		
pant to lower their bodies temperature		
are from the nocturnal animals that have	poor night	vision
have the ability to rotate their heads in	all direction	ns, and
it is called super sensory adaptation.		
can sneak up on its prey using counte		
Arrange the following steps that represent the	e vision p	rocess:
( ) Brain translates these signals.	es	
Sie pupils allow the light to enter		
Light falls on objects.	ues send s	signals to
( ) Light falls on objects.  ( ) Sensory receptors at the back of the e		
() Sensory		
the brain.		
( ) Light reflects on the eyes.	icianea Prim 4 1	First torm - 13
9	cianca Prim	
	THE PARTY OF THE P	7

D 1

### Minimum 12

### Choose the correct answer:

is the force that attracts objects toward Earth's surfar,

a. Magnetic energy

b. Electrical energy

c. Friction force

d. Gravitu

The light-reflecting materials include

a. wood

b. mirrors

c. plastic

d. paper

To communicate through the sense of sight, we need

a. to make sound

b. light

c. to hear music

d. to touch something

The eagle is a bird that eats the meat of its prey. Its beak is strong and sharp. This structural adaptation helps it to

g. see

b. find a shelter

c. rip meat

d. escape

Songs of humpback whales in winter are characterized by

a. high-pitched sounds

b. low-pitched sounds

c. rough sounds

d. weak sounds

### it or :

Bats use light as a means of communication with each other.

The spinal cord is an important organ of the digestive system.

Fish have gills to expel oxygen underwater.

- Carbon dioxide
- 2 Diaphragm
- 3 Throat (pharynx)
- Oxygen

- a. is a common organ in the digestive and
- respiratory systems. b. is a gas necessary for respiration
- c. is a muscle that has an important role in the breathing process.
- d. is a gas produced by respiration.

### Study the following table, then complete:

	Car (A)	Car (B)	Car (C)
Distance (Meters)	200	200	100
Time (Seconds)	4	2	2

- a. Car (.....) is the fastest one.
- b. Cars (\_\_\_\_) and (\_\_\_\_) move with the same speed

Science Prim 4 First Term +135

# 1 13

### Choose the correct answer:

- mix(es) and grind(s) food inside the mouth
  - a leeth only
    - c Samo only

- b. Tongue only
- d. Teeth and tonque
- As the angle of the inclined ramp decreases, the object's speed
  - o mileases
  - c remains constant

- b. decreases
- d. becomes zero
- (3) When right talls on a gark surface,
  - a, the surface absorbs the light
  - e the light is retracted

Morse code consists of

- The bat is considered a
  - a nocturnar
  - c harmful

- b. light passes through t
- d. nothing happens
- animal.
  - b. morning
  - d. non-flying
- beeps known as dots on beeps known as dashes.
- a short short
- e short long

- b. long long
- d. long short

### Choose from column (A) what suits it in column (B):

- a. it does not absorb food.
- 11119 , 996
- b. a type of adaptation that helps animals to not
- opposes.
- c, ants use it to sense and communicate sme.s
- u.De.u.de
- d. It helps us see.
- le"
- e a muscle that plays an important role in breat" 🖓





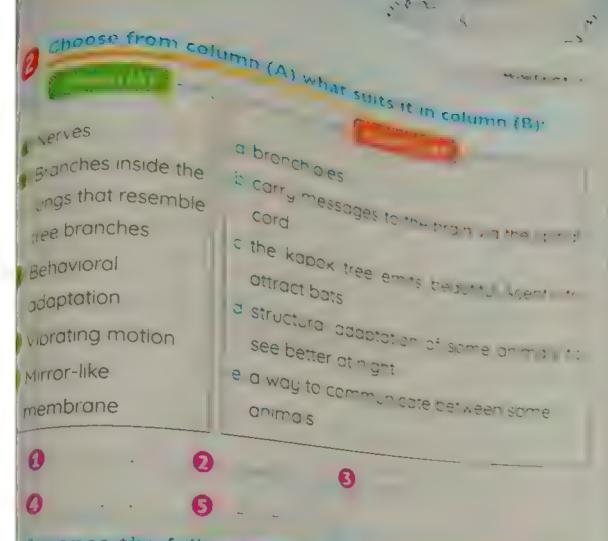


from the following figure, find the bike's speed. 100 m in 2 sec After noticing the following figure, what happens until you see this apple? Science Frence 4 French From Late .

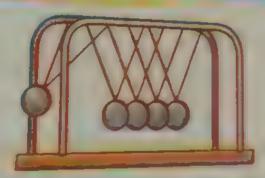
# Choose the correct answer:

m. 4 - First Term

the correct an	
The is an exc	ample of objects that allows
through.	ample of objects that allow light to
a. lens	b. paper
c. wood	d mirror
A tube with muscles the	at help in pushing food into the stores
it's called	at the properties and the storest
a. trachea	
b. esophagus	
c. small intestine	
d. large intestine	
All of the following are	components of the nervous system
except the	Components of the hervous system
a. spinal cord	b. heart
c. nerves	d. brain
As roller coaster moves	up or down, which of the following
remains constant?	op of down, which of the following
a. Object's speed	
b. Kinetic energy	
c. Potential energy	
d. Object's mass	
Honeybees can communic	cate with each other by
echolocation	
flashvlights	
dancing	
Morse code	



# Arrange the following steps in Newton's cradle:



- ) The ball moves toward the other bals
- ) Kinetic energy transfers to all the other balls
- ) The ball is raised up so it stores patential energy.
- ) The last ball moves
- ) When the ball hits the first ba
- ) Some kinetic energy changes to sound one new one Summed Priest & First Form 155".

### hoose the correct answer:

We can say an object is in a state of motion when its

·ha

- a. shape
- b. size
- c. color
- d. position

When your eyes see a red traffic light, it sends a signal to we.

- a. increase the speed
- b. decrease the speed
- c. keep your speed
- d. start moving

puff up (blow) their bodies with the air to scare their enemes

- a. Bull sharks
- b. Panther chameleons
- c. Snakes
- d. Jerboas

When light strikes an opaque object,

- a. light reflects
- b. light refracts
- c. shadow is formed
- d. light passes through it

have the ability to turn their heads in all directions

a. Snakes

b. Jerboas

c. Dolphins

d Owls

Choose from column (A) what suits it in column (B): Ammeter a. It is the change in an object's position 1 Respiration b. It is the visible form of energy that is training. 1 Energy c. the force that pulls things downwards . Gravity d. the process of pushing air in and out of the trait s Motion e. a measuring unit for long distances f. it is the ability to do work 1 -ght 6 Answer the following questions: A dolphin can locate living organisms and things under the surface of the water. Explain the feature that he ps the ancome to do so. There are some nocturnal animals that depend on the state senses to get their prey, give examples. 3 Snakes depend on identifying their prey and catching them. night by sensing heat. Determine the reason Science prim 4 | Hallerm . 139 .

301.

# Model Exams

### Model Exam

choose the correct answer:

- oc 2d 3b 4d 3b
- $3 \times 3 \times 4 \times 5 \times 5$ Speed = distance ÷ time =  $600 \div 6$ = 100 km/hr.
- which of the following surfaces represents the reflection of light rays from a wooden spoon and why?
- (B), because light rays reflect in different directions when they fall on a rough surface.

### Model Exam 2

- Choose the correct answer:
- 1 c 2 d 3 a 4 b 5 d
  - 0 × 2 / 3 × 4 × 5 /
- Car (B) has higher speed because it covers a longer distance at the same time.
- Label the following two processes, then answer the questions:
- (A): inhalation (B): exhalation
- 1 It contracts and moves down.
- 2 It decreases.

### Model Exam 3

- Choose the correct answer:
  - 0 b 0 c 0 d 0 0 0 0
- Put (V) or (X):
  - OX OVOXOXOX
- Study the following figure, then choose the correct word:
  - (a) decreases slower
  - (b) Increases faster
- 4 A Transparent B Opaque

### Model Exam 4

- 1 Choose the correct answer:
  - 0 b 0 d 0 c 0 d 0 c
- 2 Put (/) or (X):
  - 0 × 0 / 0 / 0 / 0 ×
- 3 Speed of the yellow car
  - = distance + time = 10 + 5 = 2 m/sec
  - Speed of the green car = distance + time
  - = 20 +5 = 4 m/sec
  - The green car is faster.
  - 4 Figure (2)

Sections from 4 - First Form + 172

# Final (Revision)

# Model Exam 5

- 1 Choose the correct answer:
- 1 5 2 c 8 a 4 c 5 b 2 Put (//) or (//):
- 1 / 2 / 3 × 4 / 5 ×
- Speed = distance + time = 1200 + 20 = 60 m/sec
- Classify the following words in the table:

Digestive	Nervous	Respiratory
System	System	System
- Tongue - Anus - Liver - Stomach - Small Intestine	- Brain - Spinal cord - Nerves	- Lungs - Nose - Alveoli

### Model Exam 6

- Choose the correct answer:
  - 1 b 2 c 3 a 4 b 5 b
- The red car faster because it covers longer distance at the same time.
- Choose from column (A) what suits it in column (B):
  - 1 b 2 a 3 e 4 d 5 c
  - What is the types of adaptation

### in the following cases?

- 1 Behavioral 2 Structural
- 3 Structural 4 Behavioral

Science Prim. 4 - First Term

### Model Exam 7

- Choose the correct answer
  - 0 0 0 0 0 0 0
- 2 Put (/) or (x):
  - 0 × 0 / 0 / 0 / 0 ;
- 3 Classify the following according the sense that the living organ uses to communicate as

Movement	Hearing Sense	Smell Sense	Touch Serme	Topic T
Bees	-Dolphins -Bats -Egyptian mangooses	Acits	Shokes	16

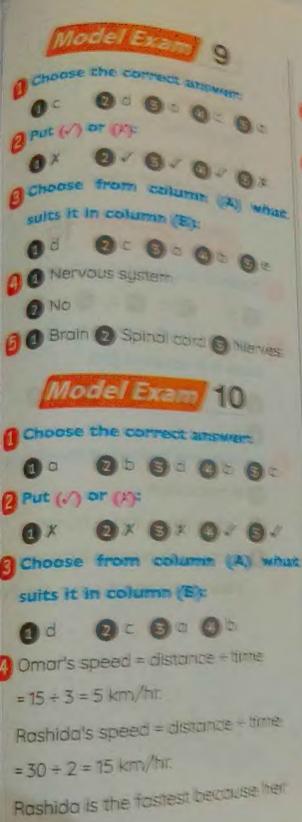
4 Speed = distance + time= 200 - = = 40 km/hr

### Model Exam | 8

- Choose the correct answer
- 16 00 8d 06 8t
- 2 Put (/) or (x):
  - 1 x 2 / 5 / 0 x 8:
- 3 Classify the following words the table:

Shiny Surfaces	Rough Surfaces	Transporti Surfaces
Mirror	Wood	Gloss
Metal		Plasta

- 4 Choose from column (A) \*\*\*
  - suits it in both columns (#) & (
  - 0 co 0 8 1 b-c



speed is greater.

Model Exam Choose the correct answers 0 0 00 0 b 0 c Bank (c) or (x): OX OX OX OX Complete using the following words: Pennec foxes 2 Bots 3 Owls 4 Bull sharks Afrange the following steps: - Light fails on objects. - Light reflects on the eyes. - Eye pupils allow the light to enter the eyes. -Sensory receptors at the back of the eyes send signals to brain. - Brain translates these signals. Model Exam 12 Choose the correct answer: 2 b 3 b 4 c 3 a Put (/) or (x): 0 × 0 × 0 / 0 / Choose from column (A) what suits it in column (B): 0 0 0 0 b 11 0 (b) A-C 4) (a) B

### Final (Revision)

### Model Exam 13

- 1) Choose the correct answer:
  - 1 d 2 b 3 a 4 a 6 c
- Choose from column (A) what suits it in column (B):
  - 8 d 3 b 6 0 0 0 6 6 c
- 3 Speed = distance + time = 100 + 2 = 50 m/sec.
- 4 Light falls on the apple.
  - Light reflects from the apple to the eue
  - Light enters the eye through the pupils.
  - The sensory receptors of the eyes send signals to the brain to translate them.
  - The brain translates and processes this information.

### Model Exam 14

- Choose the correct answer:
- 10 25 35 4d 5c Choose from column (A) what

suits it in column (B):

2 a 3 c 4 e 5 d

### Arrange the following steps:

- The ball is raised up so it stores potential energy.
- The ball moves toward the other balls

- When the ball hits the first ball
- Kinetic energy transfers to all he
- The last ball moves
- Some kinetic energy changes by sound and heat energies.

### Model Exam 15

- Choose the correct answer
  - 2 b 3 b 4 c 6d
- 2 Choose from column (A) what suits it in column (B):
  - 1 e 2 d 3 f 4 c 3 a
- 3 Answer the following questions:
  - 1 Echolocation
  - 2 Cats deer dogs horses
  - 3 Because snakes have a poornight vision and cannot see in the dark